

Exhibit 1

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**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION**

CISCO SYSTEMS, INC.,

Plaintiff,

v.

ARISTA NETWORKS, INC.,

Defendant.

Case No. 5:14-cv-05344-BLF (PSG)

**OPENING EXPERT REPORT OF KEVIN ALMEROTH
REGARDING COPYING**

SUBMITTED ON BEHALF OF CISCO SYSTEMS, INC.

**CONTAINS HIGHLY CONFIDENTIAL – ATTORNEYS’ EYES ONLY INFORMATION
AND SOURCE CODE**

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I. INTRODUCTION

1. I have been retained by counsel for Cisco Systems, Inc. (“Cisco”) as an expert in this litigation to provide opinions regarding Cisco’s copyrighted works and the infringement of certain Cisco copyrights by Arista Networks, Inc. (“Arista”).

2. I have been retained to consult with counsel, review documents and other information, analyze certain Arista products and services, and be available to testify regarding my opinions on behalf of Cisco in connection with litigation brought by Cisco against Arista.

3. I have been asked to analyze, among other things, whether Cisco’s copyrighted works are original, creative works and expressions, and whether Arista has copied Cisco’s copyrighted works, as discussed below.

4. My analysis, opinions, and reasoning are detailed below and in the attached exhibits, which provide additional analysis, opinion, reasoning, and evidence, and which are incorporated here by reference as part of this report.

5. I am paid my customary rate of \$600 an hour for time spent on research, report preparation, deposition and/or trial. I am reimbursed for incurred expenses. I have not received, and do not expect to receive, any additional compensation for my work on this action, and payment of my fees is in no way contingent upon the outcome of this case, the outcome of my investigation, or the opinions that I provide.

II. BACKGROUND & QUALIFICATIONS

A. Qualifications

6. In forming my opinions, I am relying on my education and experience as described below.

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7. I summarize in this section my educational background, career history, publications, and other relevant qualifications.

8. I am currently a Professor in the Department of Computer Science at the University of California, Santa Barbara (UCSB). I also hold an appointment and am a founding member of the Computer Engineering (CE) Program. I am a founding member of the Media Arts and Technology (MAT) Program, and the Technology Management Program (TMP). I also served as the Associate Director of the Center for Information Technology and Society (CITS) from 1999 to 2012. I have been a faculty member at UCSB since July 1997.

9. I hold three degrees from the Georgia Institute of Technology: (1) a Bachelor of Science degree in Information and Computer Science (with minors in Economics, Technical Communication, and American Literature) earned in June, 1992; (2) a Master of Science degree in Computer Science (with specialization in Networking and Systems) earned in June, 1994; and (3) a Doctor of Philosophy (Ph.D.) degree in Computer Science (Dissertation Title: Networking and System Support for the Efficient, Scalable Delivery of Services in Interactive Multimedia Systems, minor in Telecommunications Public Policy) earned in June, 1997.

10. One of the major themes of my research has been the delivery of multimedia content and data between computing devices and users. In my research, I have looked at large-scale content delivery systems and the use of servers located in a variety of geographic locations to provide scalable delivery to hundreds, even thousands, of users simultaneously. I have also looked at smaller-scale content delivery systems in which content, including interactive communication like voice and video data, is exchanged between computers and portable computing devices. As a broad theme, my work has examined how to exchange content more efficiently across computer networks, including the devices that switch and route data

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traffic. More specific topics include the scalable delivery of content to many users, mobile computing, satellite networking, delivering content to mobile devices, and network support for data delivery in wireless network.

11. Beginning in 1992, when I started graduate school, the first focus of my research was on the provision of interactive functions (VCR-style functions like pause, rewind, and fast-forward) for near video-on-demand systems in cable systems. In particular, my work explored how to aggregate requests for movies at a cable head-end, and then how to satisfy a multitude of requests using one audio/video stream broadcast to multiple receivers simultaneously. Continued evolution of this research has resulted in the development of new techniques to scalably deliver on-demand content including audio, video, web documents, and other types of data, through the Internet and over other types of networks, including over cable systems, broadband telephone lines, and satellite links.

12. An important component of my research from the very beginning has been investigating the challenges of communicating multimedia content between computers and across networks. Although the early Internet was designed mostly for text-based non-real time applications, the interest in sharing multimedia content quickly developed. Multimedia-based applications ranged from downloading content to a device to streaming multimedia content to be instantly used. One of the challenges was that multimedia content is typically larger than text-only content, but there are also opportunities to use different delivery techniques since multimedia content is more resilient to errors. I have worked on a variety of research problems and used a number of systems that were developed to deliver multimedia content to users.

13. In 1994, I began to research issues associated with the development and deployment of a one-to-many communication facility (called “multicast”) in the Internet (first

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deployed as the Multicast Backbone, a virtual overlay network supporting one-to-many communication). Some of my more recent research endeavors have looked at how to use the scalability offered by multicast to provide streaming media support for complex applications like distance learning, distributed collaboration, distributed games, and large-scale wireless communication. Multicast has also been used as the delivery mechanism in systems that perform local filtering (*i.e.*, sending the same content to a large number of users and allowing them to filter locally content in which they are not interested).

14. Starting in 1997, I worked on a project to integrate the streaming media capabilities of the Internet together with the interactivity of the web. I developed a project called the Interactive Multimedia Jukebox (IMJ). Users would visit a web page and select content to view. The content would then be scheduled on one of a number of channels, including delivery to students in Georgia Tech dorms delivered via the campus cable plant. The content of each channel was delivered using multicast communication.

15. In the IMJ, the number of channels varied depending on the capabilities of the server including the available bandwidth of its connection to the Internet. If one of the channels was idle, the requesting user would be able to watch their selection immediately. If all channels were streaming previously selected content, the user’s selection would be queued on the channel with the shortest wait time. In the meantime, the user would see what content was currently playing on other channels, and because of the use of multicast, would be able to join one of the existing channels and watch the content at the point it was currently being transmitted.

16. The IMJ service combined the interactivity of the web with the streaming capabilities of the Internet to create a jukebox-like service. It supported true Video-on-Demand when capacity allowed, but scaled to any number of users based on queuing requested programs.

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As part of the project, we obtained permission from Turner Broadcasting to transmit cartoons and other short subject content. We also attempted to connect the IMJ into the Georgia Tech campus cable television network so that students in their dorms could use the web to request content and then view that content on one of the campus’s public access channels.

17. More recently, I have also studied issues concerning how users choose content, particularly when considering the price of that content. My research has examined how dynamic content pricing can be used to control system load. By raising prices when systems start to become overloaded (i.e., when all available resources are fully utilized) and reducing prices when system capacity is readily available, users’ capacity to pay as well as their willingness can be used as factors in stabilizing the response time of a system. This capability is particularly useful in systems where content is downloaded or streamed to users on-demand.

18. As a parallel research theme, starting in 1997, I began researching issues related to wireless devices. In particular, I was interested in showing how to provide greater communication capability to “lightweight devices,” *i.e.*, small form-factor, resource-constrained (*e.g.*, CPU, memory, networking, and power) devices.

19. Starting in 1998, I published several papers on my work to develop a flexible, lightweight, battery-aware network protocol stack. The lightweight protocols we envisioned were similar in nature to protocols like Universal Plug and Play (UPnP) and Digital Living Network Alliance (DLNA).

20. From this initial work, I have made wireless networking—including ad hoc and mesh networks and wireless devices—one of the major themes of my research. One topic includes developing applications for mobile devices, for example, virally exchanging and tracking “coupons” through “opportunistic contact” (*i.e.*, communication with other devices

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coming into communication range with a user). Other topics include building network communication among a set of mobile devices unaided by any other kind of network infrastructure. Yet another theme is monitoring wireless networks, in particular different variants of IEEE 802.11 compliant networks, to (1) understand the operation of the various protocols used in real-world deployments, (2) use these measurements to characterize use of the networks and identify protocol limitations and weaknesses, and (3) propose and evaluate solutions to these problems.

21. As an important component of my research program, I have been involved in the development of academic research into available technology in the market place. One aspect of this work is my involvement in the Internet Engineering Task Force (IETF), including many content delivery-related working groups like the Audio Video Transport (AVT) group, the MBone Deployment (MBONED) group, Source Specific Multicast (SSM) group, the Inter-Domain Multicast Routing (IDMR) group, the Reliable Multicast Transport (RMT) group, the Protocol Independent Multicast (PIM) group, etc. I have also served as a member of the Multicast Directorate (MADDOGS), which oversaw the standardization of all things related to multicast in the HEFT. Finally, I was the Chair of the Internet2 Multicast Working Group for seven years.

22. I am an author or co-author of nearly 200 technical papers, published software systems, IETF Internet Drafts and IETF Request for Comments (RFCs).

23. My involvement in the research community extends to leadership positions for several journals and conferences. I am the co-chair of the Steering Committee for the ACM Network and System Support for Digital Audio and Video (NOSSDAV) workshop and on the Steering Committees for the International Conference on Network Protocols (ICNP), ACM

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Sigcomm Workshop on Challenged Networks (CHANTS), and IEEE Global Internet (GI) Symposium. I have served or am serving on the editorial boards of IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing, IEEE Transactions on Networks and System Management, IEEE Network, ACM Computers in Entertainment, AACE Journal of Interactive Learning Research (JILR), and ACM Computer Communications Review.

24. I have co-chaired a number of conferences and workshops including the IEEE International Conference on Network Protocols (ICNP), ACM International Conference on Next Generation Communication (CoNext), IEEE Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON), International Conference on Communication Systems and Networks (COMSNETS), IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS), the International Workshop On Wireless Network Measurement (WiNMee), ACM Sigcomm Workshop on Challenged Networks (CHANTS), the Network Group Communication (NGC) workshop, and the Global Internet Symposium; and I have been on the program committee of numerous conferences.

25. Furthermore, in the courses I teach, the class spends significant time covering all aspects of the Internet including each of the layers of the Open System Interconnect (OSI) protocol stack commonly used in the Internet. These layers include the physical and data link layers and their handling of signal modulation, error control, and data transmission. I also teach DOCSIS, DSL, and other standardized protocols for communicating across a variety of physical media including cable systems, telephone lines, wireless, and high-speed Local Area Networks (LANs).

26. I teach the configuration and operation of switches, routers, and gateways including routing and forwarding and the numerous respective protocols as they are standardized

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and used throughout the Internet. Topics include a wide variety of standardized Internet protocols at the Network Layer (Layer 3), Transport Layer (Layer 4), and above.

27. In addition to having co-founded a technology company myself, I have worked for, consulted with, and collaborated with various technology companies.

28. I am a Member of the Association of Computing Machinery (ACM) and a Fellow of the Institute of Electrical and Electronics Engineers (IEEE).

29. In my 35 years of experience with computer software, I have reviewed innumerable lines of source code written by many different programmers. And as mentioned above, I also teach the configuration and operation of various network devices (switches, routers, gateways), which includes topics related to command line interface computer programs and the technology upon which such programs are based. I also teach network programming classes and assign programming projects that I personally review and grade.

30. As a result of my teaching, I am familiar with variations of command and program expression that arise when a set of engineers and/or programmers are asked to solve a problem. What I have found in my decades of experience is that engineers and programmers find many ways to write commands and programs to express solutions to the same problem.

31. I also am familiar with tools used to assist in the detection of plagiarism or source code copying in a university setting. I have worked with UCSB to develop software tools for detecting plagiarism. For example, I was involved in developed the PAIRwise Plagiarism Detection Systems (“PAIRwise”). PAIRwise is a service that I helped invent that provides a variety of functions including comparing assignments against other assignments in a class and comparing assignments against the vast amount of data available on the Internet. The goal is to help professors detect plagiarism in their students’ work.

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32. I also have conducted research; co-authored papers; and developed systems to support the detection of plagiarism through document comparison and similarity detection (*see, e.g.*, the papers and systems in my CV, specifically II.A.55, II.A.40, II.B.36, and II.E.15). I have also used tools like CopyFind, PAIRwise, and the Measure of Software Similarity (MOSS) program in my courses.

33. Furthermore, I find programming an expressive, creative endeavor, just like technical writing. In both cases, although there is a purpose to be served, there are many ways to accomplish the goal, and a wide range of expressive choices in doing so.

34. I attach as **Attachment A** my *curriculum vitae*, which includes a more complete list of my qualifications.

B. Materials Considered

35. In forming my opinions, I have relied on my education and experience as described above.

36. I have also reviewed and considered the materials cited in this reports as well as the materials listed in **Attachment B** of this report, and the materials cited in all exhibits to this report, all of which are incorporated here by reference.

37. I also have inspected and/or tested:

- three Arista switches running EOS
- Arista’s EOS operating system produced by Arista in this litigation
- Arista’s EOS source code made available for inspection at the office of Arista’s counsel
- two Cisco switches running IOS (Catalyst 3560E, Catalyst 4948E)
- Cisco source code produced by Cisco in this litigation

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manuals to further educate and train customers on the use of IOS and its CLI.¹¹ As a result of this hard work and investment, I understand Cisco believes that its CLI also is a valuable asset and critical component of its business.¹²

C. IOS’s Creative CLI Commands & Hierarchies

53. As part of its CLI development, Cisco developed a distinctive and elegant syntax and structure for the commands that are used by the IOS CLI. As the IOS documentation explains:¹³

Understanding Command Syntax

Command syntax is the format in which a command should be entered in the CLI. Commands include the name of the command, keywords, and arguments. Keywords are alphanumeric strings that are used literally. Arguments are placeholders for values that a user must supply. Keywords and arguments may be required or optional.

Specific conventions convey information about syntax and command elements. Table 5 describes these conventions.

¹¹ CSI-CLEO3838924, Giancarlo Decl., ¶ 12.

¹² CSI-CLEO3838924, Giancarlo Decl., ¶ 12.

¹³ CSI-CLI-00226710 at CSI-CLI-00226747-48.

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Table 5 *CLI Syntax Conventions*

Symbol/Text	Function	Notes
< > (angle brackets)	Indicate that the option is an argument.	Sometimes arguments are displayed without angle brackets.
A.B.C.D.	Indicates that you must enter a dotted decimal IP address.	Angle brackets (< >) are not always used to indicate that an IP address is an argument.
WORD (all capital letters)	Indicates that you must enter one word.	Angle brackets (< >) are not always used to indicate that a WORD is an argument.
LINE (all capital letters)	Indicates that you must enter more than one word.	Angle brackets (< >) are not always used to indicate that a LINE is an argument.
<cr> (carriage return)	Indicates the end of the list of available keywords and arguments, and also indicates when keywords and arguments are optional. When <cr> is the only option, you have reached the end of the branch or the end of the command if the command has only one branch.	—

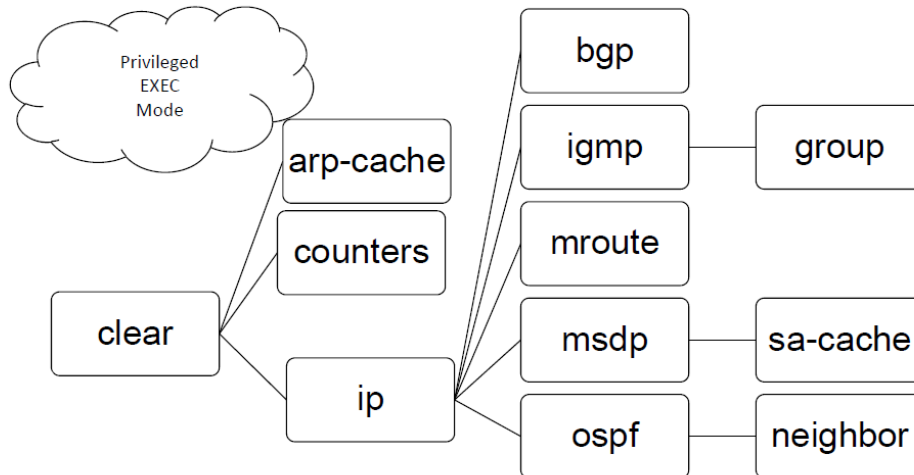
54. Cisco’s command expressions are organized hierarchically into groups and sub-groups of command expressions (as opposed to, for instance, having no organizational structure). For example, I understand Cisco has asserted various command hierarchies in this case including, *e.g.*, the “aaa” command hierarchy, “bgp” command hierarchy, “clear” command hierarchy, “dot1x” command hierarchy, “ip” command hierarchy, “ipv6” command hierarchy, “neighbor” command hierarchy, “show” command hierarchy, “snmp-server” command hierarchy, “spanning-tree” command hierarchy, “vrrp” command hierarchy, among other command expressions and hierarchies.

55. Within a given command hierarchy, all of the commands start with the same word. For example, all of the commands within the “aaa” command hierarchy start with the “aaa.” Additional sub-hierarchies within a command hierarchy that Cisco has asserted in this case include, *e.g.*, “ip dhcp” subhierarchy, “ip igmp” sub-hierarchy, “ip msdp” sub-hierarchy, “ip

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ospf” sub-hierarchy, “ip pim” sub-hierarchy, “ipv6 nd” sub-hierarchy, “ipv6 ospf” sub-hierarchy, “show interfaces” subhierarchy, and “show ipv6” sub-hierarchy.

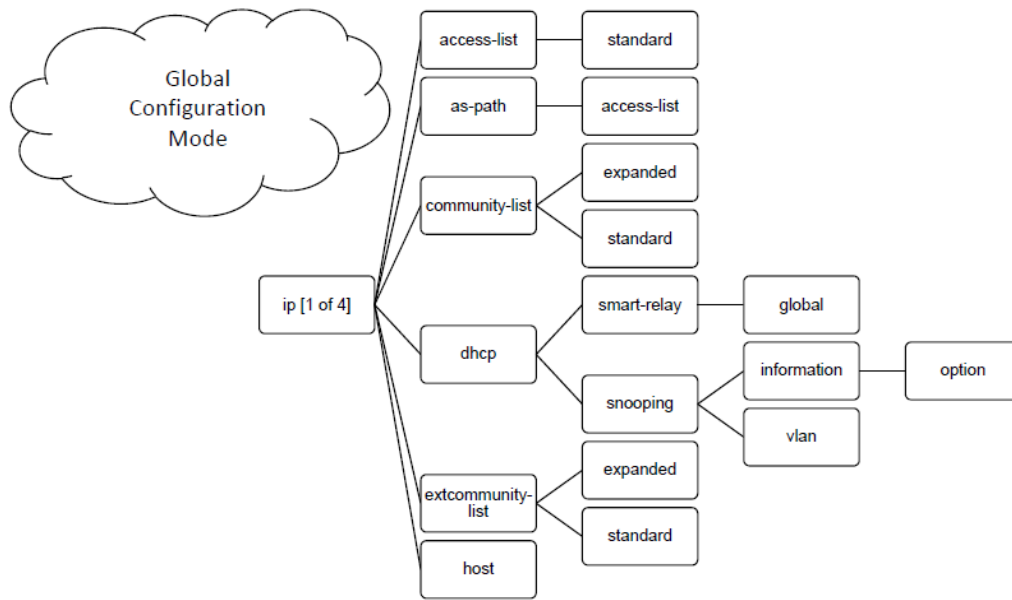
56. Within a given command sub-hierarchy, all of the commands start with the same two words. For example, all of the commands within the “ip dhcp” sub-hierarchy start with “ip dhcp.” And there can be further sub-hierarchies within a given sub-hierarchy. One way to visually illustrate the hierarchy and organization of Cisco’s command expressions is through the use of a tree structure, for example:¹⁴



(“clear” hierarchy in “Privileged EXEC” mode in IOS 11.0)

¹⁴ See Exhibit D to Cisco’s Responses to Arista Interrogatory Nos. 2 and 16. The images below were taken from Cisco’s interrogatory response, and I agree with Cisco’s depiction of these hierarchies.

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(“ip” hierarchy in “Global Configuration” model in NX-OS 6.2)

57. I understand this hierarchical arrangement of Cisco’s CLI command expressions was originally created by Cisco engineer Kirk Lougheed in 1986.¹⁵ That arrangement was first documented in the “Cisco Systems ASM/AGS User Manual and Configuration Guide Version 5.2.”¹⁶ As command expressions were added in subsequent versions of Cisco’s copyrighted operating systems, the hierarchical arrangement of command expressions was modified and extended by the addition of more expressions.¹⁷

D. Modes/Prompts

58. In the IOS CLI, command “modes” are used to navigate the CLI and perform basic device startup, configuration, and monitoring tasks. “The CLI command mode structure is

¹⁵ Cisco’s Third Supplemental Response to Arista’s Interrogatory No. 16; Conversation with Kirk Lougheed (June 3, 2016); *see generally* Deposition Testimony of Kirk Lougheed.

¹⁶ CSI-CLI-00358622 to CSI-CLI-00358654.

¹⁷ Cisco’s Third Supplemental Response to Arista’s Interrogatory No. 16.

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hierarchical, and each mode supports a specific set of commands.”¹⁸ Each mode also has an associated visual “prompt” that helps the user identify which mode they are in and, therefore, which commands are available.¹⁹ Not unlike multi-word command expressions, creating the precise modes and their associated prompts associated with IOS was done through a creative process since professional judgment and subjective decisions by Cisco’s engineers were required to create them. The IOS command modes and their associated prompts are discussed below.

59. “User EXEC Mode” is the default command mode for the CLI. The EXEC commands available at the user EXEC level are a subset of those available at the “privileged EXEC” mode. In general, the user EXEC commands allow a user to connect to remote devices, change terminal settings on a temporary basis, perform basic tests, and list system information. The prompt for user EXEC mode is the name of the device followed by an angle bracket, e.g., Router>.

60. Another example of an IOS mode is “Privileged EXEC Mode.” Privileged EXEC mode is password protected, and allows the use of all EXEC mode commands available on the device. To enter privileged EXEC mode from user EXEC mode, a user will enter the “enable” command. The privileged EXEC mode prompt consists of the devices’ host name followed by the pound sign, *e.g.*, Router#.

61. A third type of IOS mode is “Global Configuration Mode.” “Global Configuration Mode” is used for configuration commands that generally apply to features that affect a system as a whole, rather than just one protocol or program. Once a user is in Privileged EXEC mode they can access “Global Configuration Mode” through the use of the “enable”

¹⁸ CSI-CLI-00226710 at CSI-CLI-00226743.

¹⁹ CSI-CLI-00226710 at CSI-CLI-00226745.

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command. The router prompt for global configuration mode is indicated by the term config in parenthesis: Router(config)#.

62. IOS prompts help a user identify which mode they are in and, therefore, which commands are available for use. Each mode described above has the following corresponding prompts:²⁰

Table 3 CLI Command Modes

Command Mode	Access Method	Prompt	Exit Method	Mode Usage
User EXEC	Log in.	Router>	Issue the logout or exit command.	<ul style="list-style-type: none"> • Change terminal settings. • Perform basic tests. • Display device status.
Privileged EXEC	From user EXEC mode, issue the enable command.	Router#	Issue the disable command or the exit command to return to user EXEC mode.	<ul style="list-style-type: none"> • Issue show and debug commands. • Copy images to the device. • Reload the device. • Manage device configuration files. • Manage device file systems.
Global configuration	From privileged EXEC mode, issue the configure terminal command.	Router(config)#	Issue the exit command or the end command to return to privileged EXEC mode.	Configure the device.
Interface configuration	From global configuration mode, issue the interface command.	Router(config-if)#	Issue the exit command to return to global configuration mode or the end command to return to privileged EXEC mode.	Configure individual interfaces.
Line configuration	From global configuration mode, issue the line vty or line console command.	Router(config-line)#	Issue the exit command to return to global configuration mode or the end command to return to privileged EXEC mode.	Configure individual terminal lines.

63. The command modes and prompts were first documented in the “Cisco Systems ASM/AGS User Manual and Configuration Guide Version 5.2.”²¹ I understand that they were created by at least the date of that document: July 20, 1986.²²

²⁰ CSI-CLI-00226710 at CSI-CLI-00226745.

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E. Screen Displays -- Responses/Outputs

64. Another aspect of Cisco’s CLI are the screen outputs/displays generated by the CLI in response to a command input. Cisco’s CLI outputs contain context sensitive response information that is displayed to a user, such as configuration information of the device and networking information related to a device, among other command-specific outputs. The CLI outputs contain unique and varied information types in textual form and are organized in unique structural arrangements, all of which were created by Cisco. Exemplary CLI outputs for certain asserted Cisco CLI commands are provided below as examples:

```
Router# show ip route
```

```
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
        ia - IS-IS inter area, * - candidate default, U - per-user static route
        o - ODR, P - periodic downloaded static route
```

```
Gateway of last resort is not set
```

(output for “show ip route”²³)

```
Router# show interfaces atm 0/0/0
ATM0/0/0 is up, line protocol is up
Hardware is cyBus ATM
Internet address is 10.1.1.1/24
MTU 4470 bytes, sub MTU 4470, BW 156250 Kbit, DLY 80 usec, rely 255/255, load 1/255
Encapsulation ATM, loopback not set, keepalive set (10 sec)
Encapsulation(s): AAL5, PVC mode
256 TX buffers, 256 RX buffers,
2048 maximum active VCs, 1024 VCs per VP, 1 current VCCs
VC idle disconnect time: 300 seconds
Last input never, output 00:00:05, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 1 packets/sec
5 minute output rate 0 bits/sec, 1 packets/sec
  5 packets input, 560 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  5 packets output, 560 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 output buffer failures, 0 output buffers swapped out
```

²¹ CSI-CLI-00358622 to CSI-CLI-00358654.

²² Cisco’s Third Supplemental Response to Arista’s Interrogatory No. 16.

²³ CSI-CLI-00408381, Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IP2R-553.

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(output for “show ip route”²⁴)

```

Spanning tree enabled protocol rstp
Root ID    Priority    32770
           Address    000d.eca3.9f01
           Cost       4
           Port       4105 (port-channel10)
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID  Priority    32770 (priority 32768 sys-id-ext 2)
           Address    0022.5579.7641
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Interface      Role Sts Cost      Prio.Nbr Type
-----
Po10           Root FWD 2         128.4105 (vPC peer-link) P2p
Po20           Desg FWD 1         128.4115 (vPC) P2p
Po30           Root FWD 1         128.4125 (vPC) P2p

```

(output for “spanning tree enabled protocol rstp”²⁵)

65. CLI screen outputs are a key part of the IOS CLI “look and feel” as they are the expressions that a user (typically a network engineer) interacts with and is able to respond to. And it is one of the distinct ways that a user knows that he or she is using Cisco’s IOS CLI. As with the command inputs, the Cisco engineers faced endless aesthetic choices for each of the numerous screen outputs now found in the Cisco IOS CLI computer program. The structure and organization of the screen outputs were not dictated by technical requirements—they could be been organized in various different number of ways.

F. IOS-XR

66. IOS XR is a series of Cisco IOS versions used on carrier-grade routers such as the CRS series, 12000 series, and ASR9000 series. IOS-XR was designed to service the needs of

²⁴ CSI-CLI-00248571, Cisco IOS Asynchronous Transfer Mode Command Reference (2011), at 476.

²⁵ CSI-CLI-00178252, Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 63.

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C. Copyrightable Expressions in Cisco’s CLI: Originality & Creativity

99. I understand that Cisco contends that hundreds of multi-word command expressions have been copied by Arista.⁴⁸ I also understand that Cisco contends that Arista copied the associated command modes, prompts, as well as the following command hierarchies:

- “aaa” command hierarchy
- “bgp” command hierarchy
- “clear” command hierarchy
- “dot1x” command hierarchy
- “ip” command hierarchy
- “ipv6” command hierarchy
- “neighbor” command hierarchy
- “show” command hierarchy
- “snmp-server” command hierarchy
- “spanning-tree” command hierarchy
- “vrrp” command hierarchy

100. I also understand that Cisco contends that original documentation such as user manuals and screen outputs relating to its copyrighted works have also been copied as well as command descriptions (also known as help descriptions, help screens, or “helpdesc”).

101. It is my opinion that Cisco’s asserted command expressions, hierarchies, modes, and prompts contain considerable original expression in their selection and arrangement. To start, designing a command syntax for a particular function is a subjective exercise that requires independent judgment of the author and numerous creative and expressive choices. For example, an author must select one or more individual words that she wants to use. The author must then determine the spelling of those words and whether to abbreviate or otherwise modify the traditional spelling. The author must determine what order to place the words in and the relationship, if any, that the words should have with one another. All of those decisions are left to the subjective judgement and creativity of the command author. In some respect, any one of

⁴⁸ See Exhibit 1 to Cisco’s Second Amended Complaint.

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the asserted command expressions could, in theory, be any random set of words or characters, and yet the command would still work. Choosing the words and the arrangement and the organization of those words is where the creativity lies.

102. My opinions are supported by sworn testimony of both Cisco and Arista. For example, Cisco distinguished engineer and IOS CLI creator Kirk Lougheed testified that as a general matter creating a piece of software is a creative process:⁴⁹

24 THE WITNESS: Writing any piece of
 25 software involves some degree of creativity. It may
 1 not be at the Shakespearean level, but maybe more
 2 prosaic. But you actually have to figure out
 3 something. You have to create something to show how
 4 stuff is done or to create something to communicate.
 5 And that’s what I was doing was creating something
 6 to communicate to the customer, to the user of the
 7 stuff, here is a command expression that will get
 8 you information, and it’s easy enough to understand
 9 what was being done.

103. Mr. Lougheed also explained that crafting commands themselves is a creative process and that specific command expressions may change during that process based on the aesthetic sensibilities and subjective judgment of the author:⁵⁰

10 Q Did you come up with the phrase “IP
 11 address”?

 3 It became clear that much more—that we
 4 were becoming a multi-protocol router. We were
 5 adding other protocols into the box, into the
 6 software.
 7 And I had—I value—I value the
 8 aesthetic of having a symmetric-looking command line
 9 expression, symmetric hierarchy. It was clear we
 10 were heading towards a hierarchy.
 11 So at some point after DECnet and perhaps

⁴⁹ Deposition Testimony of Kirk Lougheed Tr. at 338:24-339:9 (Apr. 4, 2016).

⁵⁰ Deposition Testimony of Kirk Lougheed Tr. at 128:10-129:19 (Nov. 20, 2015).

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12 a few other protocols to make things look very
 13 similar, we started prefacing our IP-only commands
 14 with “IP.” And that gave a very—what I thought
 15 was a very elegant, symmetric, elegant way of
 16 referring to different protocols within a
 17 multi-protocol router.
 18 So that is the history of the “IP address”
 19 command.

104. Mr. Lougheed provided similar testimony for specific multi-word command expressions as well such as “show ip route,”⁵¹ “show spanning-tree,”⁵² “IP routing,”⁵³ “show hosts,”⁵⁴ “clear” hierarchy,⁵⁵ and “timers basic RIP.”⁵⁶

105. Another Cisco CLI command author, Mr. Abhay Roy, testified similarly. For instance, Mr. Roy testified that the creation of the command “bfd all-interfaces” was the result of looking at a variety of protocols, collectively discussing the best way to express the concept, considering how the command “fits into the bigger ... pieces of organization of commands, what makes sense, [and] what is more aesthetically correct” within the framework of the system.⁵⁷ Mr. Roy also testified he considered many things when designing commands such as content, features, “what is being asked,” and that during the creative process “you start with your best

⁵¹ Deposition Testimony of Kirk Lougheed Tr. at 331:6-23 (April 4, 2016).

⁵² *Id.* at 337:17-20.

⁵³ Deposition Testimony of Kirk Lougheed Tr. at 145:3-25 (Nov. 20, 2015).

⁵⁴ *Id.* at 168:21-169:16 (testifying that there were other command word options he could have chosen including “computers,” “names,” “systems,” “network systems,” “end systems”).

⁵⁵ *Id.* at 174:5-175:4 (“it seemed aesthetically pleasing to me”).

⁵⁶ *Id.* at 185:13-186:5.

⁵⁷ Roy Deposition Tr. at 24:12-25; 26:2-9 (discussing that command creation involves considering “overall architecture purity”); 45:6-20 (testifying that when creating commands Cisco wanted to make “smart choices” that made sense from an “aesthetic perspective” and from “the alignment and architectural perspective”).

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guess,” which “may or may not be the best which will eventually have the light of day, but you go with your knowledge and your judgment.”⁵⁸

106. Another Cisco CLI command author, Mr. Devadas Patil, testified that the command creation process is subjective and implicates various considerations that are open to an author’s own professional judgment:

- “Well, there is—the—the product owner, which is me, lead developer for the product, comes up with initial proposal, and it is, essentially, reviewed by a group of people that are highly experienced for—for usability and extensibility, and so on, so there are certain criteria that they look—look at, including usability, extensibility, aesthetics, etc.”⁵⁹
- “So there’s a—there’s a—there’s a balance between future-proofing and—and verbosity, and—and the more you try to feature proof, the more verbose you can become, so it’s more of a subjective column how you design, keeping all of these in mind, yeah.”⁶⁰
- “Yeah, so intuitiveness, extensibility, usability, aesthetics are all factors that we considered.”⁶¹

107. Cisco engineer and CLI author Phillip Remaker’s testimony confirms the same. Mr. Remaker testified that commands, *e.g.*, “show inventory,” were created at Cisco through a collective discussion with other engineers (sometimes referred to as the Cisco “Parser Police”) during which many different word choices were considered:⁶²

2 Q. In your view, what’s creative about the
3 command “show inventory”? Strike that.
4 What is creative about the command “show
5 inventory”?
6 MR. NEUKOM: Objection. Calls for a legal
7 conclusion and personal opinion. Also off topic.
8 THE WITNESS: For this particular command,
9 we spent a lot of time in discussion and considered

⁵⁸ *Id.* at 47:8-18.

⁵⁹ Patil Deposition Tr. at 161:19-162:1 (Feb. 21, 2016).

⁶⁰ *Id.* at 186:7-11.

⁶¹ *Id.* at 187:1-9.

⁶² Remaker Deposition Tr. at 114:2-15 (Mar. 31, 2016).

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10 a lot of different ideas for how to go about doing
 11 this command. And because we engaged a number of
 12 people and spent a lot of serious time thinking
 13 about the problem and how the customer would
 14 interact with the command, I think that careful
 15 consideration could be classified as creativity.

108. Communications from other Cisco engineers further confirm that the process of command expression creation is a subjective, creative endeavor. For example:

- Adam Sweeney (formerly of Cisco, now with Arista): [REDACTED]
 [REDACTED]
 [REDACTED]
- Scott Lennartz (Cisco): “It is my belief that any exercise in naming is highly subjective, and there is rarely a ‘right’ answer”⁶⁴

109. This collaborative, creative, expressive process is what ultimately led to the Cisco command syntax of Cisco’s IOS CLI and “an aesthetic of the organization of the commands,” which includes the “hierarchical notions, the modality, the organization of the commands, and the choices of the words.”⁶⁵ And, as Mr. Remaker testified, one of the reasons why Cisco chose to organize commands into hierarchies was to “improve[] the readability of configurations.”⁶⁶ In other words: “Instead of having a single configuration line with a lot of attributes, it makes more sense to have individual lines expressing each individual attribute.”⁶⁷

⁶³ CSI-CLI00608716.

⁶⁴ CSI-CLI00608716.

⁶⁵ Remaker Deposition Tr. at 98:22-99:12 (Mar. 30, 2016).

⁶⁶ *Id.* at 106:25-107:5.

⁶⁷ *Id.* at 107:7-12.

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110. Accordingly, when the architects of Cisco’s IOS⁶⁸ CLI decided to include a particular set of commands in the platform and to give the commands particular names and associated modes, they chose from a wide range of expressive options. And that is because a computer can be taught to understand and react to different words and multi-word inputs however the designer wants. In other words, the inventors of Cisco’s IOS CLI commands did not have to include for technical reasons the specific words that are contained in the 500+ asserted command expressions. They were creative choices.

111. By way of example, the command “show” is an expression of the idea or concept of displaying a particular configuration status of the device. There are many different ways to implement that idea and many different ways to even express that idea. For example, the word “display,” “print,” “watch,” “view,” or “info” are equally sufficient ways to express this idea. Other words such as “steve” or “book” or “phone” would be used just as well—a computer can recognize any combination of letters and numbers. Indeed, other vendors—such as Huawei—implement a command hierarchy using the command “display” instead of “show.”

112. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

⁶⁸ Unless otherwise noted, my use of the term “IOS” refers to IOS, IOS-XR, IOS-XE, and NX-OS collectively.

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED] [REDACTED]

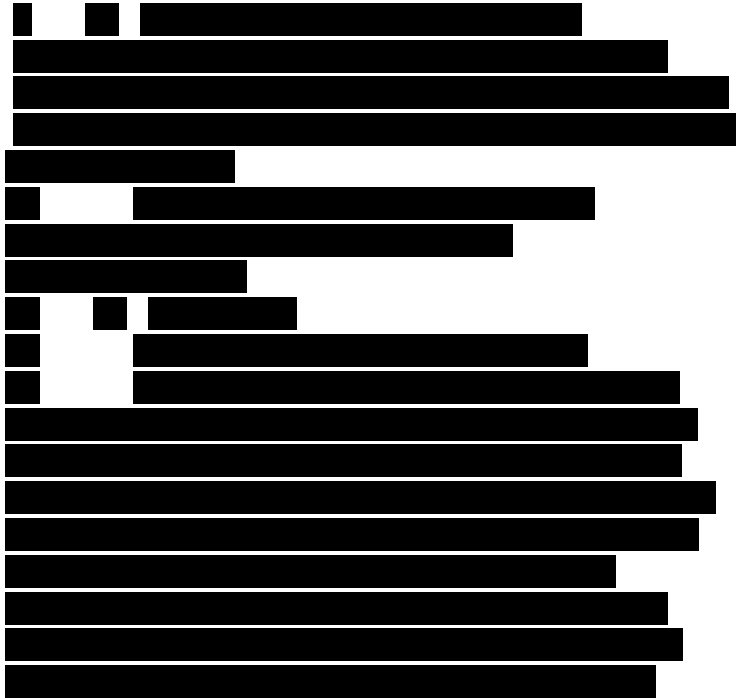
[illegible]

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[REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]

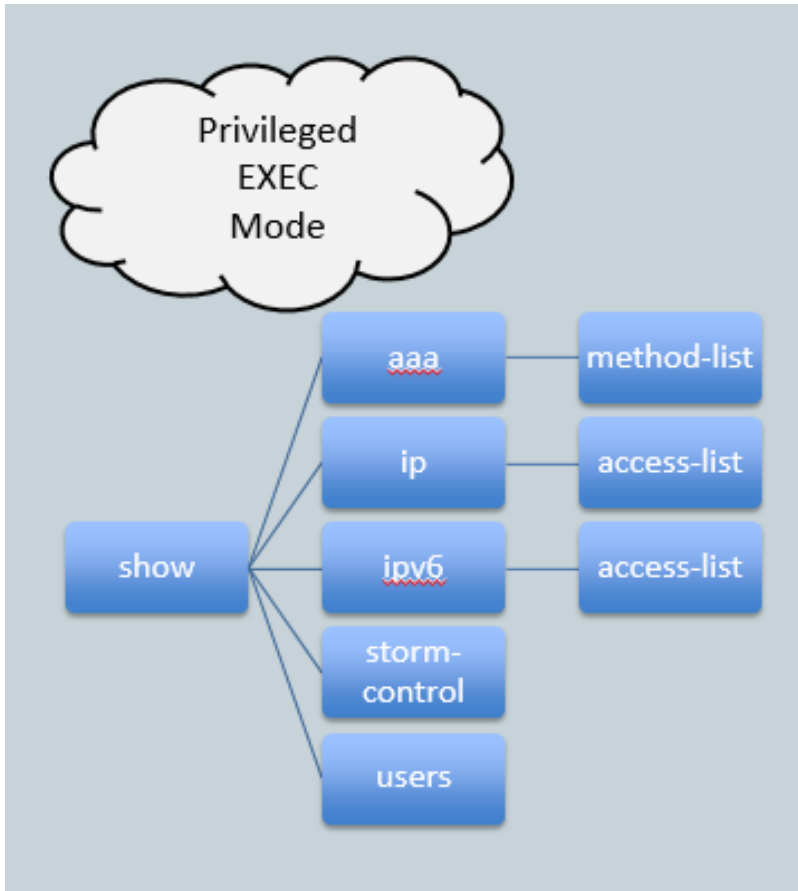
[illegible]

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113. The copied command hierarchies also contain considerable original expression. The decision to organize Cisco’s IOS CLI commands into the designers’ chosen hierarchy reflects the original choices of the designers. As an illustration, a sub-command hierarchy for “show” in Privileged EXEC mode is diagrammed below:

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114. Through this particular design, the designers were able to convey that a specific set of second words or tokens would follow the initial token, and then a further set, etc. The hierarchy conveys to a user an aesthetic sense of the set of choices, *i.e.*, what is possible and what is not. In some cases (*e.g.*, the use of “access-list” as an option under multiple higher level tokens), the hierarchy helps to organize choices into parallel possibilities.

115. By branching initially on the dimension of “show” and then building out the hierarchy from there, the designers created an organizational structural that is aesthetically pleasing, easy to understand, and easier to remember (based on the subjective belief and professional judgment of Cisco’s designers). A computer can execute the command “show_aaa_method-list” just as easily as it can execute a command called

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“show_command_ipv6_access-list.” The reason for choosing the organizational structure in the way that Cisco’s designers did is so that they would have a unique command structure that Cisco’s customers would easily be taught (again, based on the subjective belief and professional judgment of Cisco’s designers) and because there was value in “the aesthetic of having a ... symmetric hierarchy” that was “elegant.”⁶⁹

116. The decisions to organize Cisco’s commands into modes with specific prompts reflects yet another conscious choice of expression. The command modes that I understand Cisco to be asserting in this case include “EXEC,” “Privileged EXEC,” “Global configuration,” and “Interface configuration” (collectively, the “asserted command modes”). Rather than placing commands into different modes with unique prompts, the designers could have created a unified command structure without different modes and chosen a single prompt. Alternatively, Cisco’s designers could have used different names for the asserted modes; for example, they could have chosen “ADMIN” instead of “EXEC” or “Secure ADMIN” instead of “Privileged EXEC.” Similarly, “Universal setup” could have been chosen instead of “Global configuration” or “Edge setup” instead of “Interface configuration.” Almost any other word choice could have been selected.

117. Further evidence that elements of Cisco’s IOS CLI are creative is that they are what the user sees, what the user knows, and how the user talks to and interacts with the Cisco device. The user interface defines the user’s experience. With the right selection of unique, intuitive commands and hierarchies—which Cisco endeavored to create on its own—Cisco built a successful business and became a market leader. That makes Cisco’s IOS CLI distinctive compared to other competitors.

⁶⁹ Deposition Testimony of Kirk Loughheed Tr. at 128:10-129:19 (Nov. 20, 2015).

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118. Moreover, that the commands are not particularly efficient or “perfect” in all respects confirms that they are not functional. [REDACTED]

- [REDACTED]
[REDACTED]
[REDACTED]
 - [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

119. Finally, the fact that there are other competitors in the market that implement different CLIs—*e.g.*, Juniper Networks, HP, Brocade, Alcatel-Lucent, and Extreme, among others—with different commands confirms that Cisco’s multi-word command expressions are a creative expression. [REDACTED]

- [REDACTED]
- [REDACTED]

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[REDACTED]

120. [REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

⁷³ I have assumed for purposes of this report only that [REDACTED] is accurate.

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[illegible]

121. Accordingly, there is voluminous evidence that the Cisco IOS copyrighted works are Cisco original works including, for example, evidence on a command-by-command basis, showing the author/originator of each command, the earliest known document for each command, the date of earliest known document, the first operating system incorporating each command, and the date of first distribution of each command.⁷⁴

⁷⁴ See Cisco's Response to Interrogatory No. 16 and Response to Interrogatory No. 19, Exhibit F (and all supplements thereto).

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for EOS contains unauthorized reproductions of Cisco’s copyrighted command expressions in its Command Reference section, as well in the detailed descriptions of such command expressions.¹⁵² Similarly, the same Arista manual also contains unauthorized reproductions of Cisco’s copyrighted screen displays.¹⁵³

B. Cisco’s CLI Documentation Compared to Arista’s CLI Documentation

155. I understand that Cisco contends that Arista has copied creative expressions in Cisco’s product documents that describe and relate to its CLI.¹⁵⁴ I agree with Cisco.

156. To start, I note that Arista’s CEO admitted at a technology conference after this lawsuit was filed that Arista copied copyrighted expressions in Cisco’s technical documents:

“The first claim is in the technical-documentation area, and they say that we have copied pieces of their documentation. We have done a thorough review over the weekend, and to the best of our ability we can see that—this is something that is completely unacceptable to me, that less than 1% has been copied. We are taking care of the individual and personnel who’s doing it. I own up to that. That’s a mistake. I apologize to Cisco for it. We’re going to fix it in a week.”¹⁵⁵

157. [REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]

Rev. 2 (CSI-CLI-00000084), Arista Networks EOS User Manual Version 4.14.6M (CSI-CLI-00004616), Arista Networks EOS User Manual Version 4.15.0F - Rev. 2.27 (CSI-CLI-00020575), Arista Networks EOS User Manual Version 4.15.0F (CSI-CLI-00002332), Arista Networks EOS User Manual Version 4.13.6F (CSI-CLI-00016001).

¹⁵² See, e.g., Exhibit Copying-1.

¹⁵³ See, e.g., Exhibit Copying-3.

¹⁵⁴ See Second Amended Complaint; see also Cisco’s responses to Interrogatory Nos. 2-4.

¹⁵⁵ CSI-CLI-00357842 at CSI-CLI-00357849 (emphasis added).

¹⁵⁶ [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

158. I also have confirmed that there are many similarities between Arista’s user manuals and Cisco’s documents. The Arista user manuals that reflect these similarities include the following:

Date	Manual	Bates Begin	Bates End
4/8/2009	Arista Networks EOS User Manual Version 4.0.1	CSI-CLI-00007244	CSI-CLI-00007472
3/31/2010	Arista Networks EOS User Manual Version 4.4.0	CSI-CLI-00007473	CSI-CLI-00007840
3/28/2011	Arista Networks EOS User Manual Version 4.6.2	CSI-CLI-00006858	CSI-CLI-00007243
7/19/2012	Arista Networks EOS User Manual Version 4.10.0	CSI-CLI-00007841	CSI-CLI-00008984
1/22/2013	Arista Networks EOS User Manual Version 4.11.1 - Rev. 2	CSI-CLI-00010517	CSI-CLI-00011972
3/1/2013	Arista Networks EOS User Manual Version 4.11.2.1	CSI-CLI-00008985	CSI-CLI-00010516
9/16/2013	Arista Networks EOS User Manual Version 4.12.4	CSI-CLI-00014141	CSI-CLI-00016000
4/14/2014	Arista Networks EOS User Manual Version 4.13.6F	CSI-CLI-00016001	CSI-CLI-00018140
6/17/2014	Arista Networks EOS User Manual Version 4.13.7M	CSI-CLI-00011973	CSI-CLI-00014140
10/2/2014	Arista Networks EOS User Manual Version 4.14.3F - Rev. 2	CSI-CLI-00018146	CSI-CLI-00020337
12/22/2014	Arista Networks EOS User Manual Version 4.14.5F - Rev. 2	CSI-CLI-00000084	CSI-CLI-00002331
1/19/2015	Arista Networks EOS User Manual Version 4.14.6M	CSI-CLI-00004616	CSI-CLI-00006857
4/2015	Arista Networks EOS User Manual Version 4.15.OF - Rev. 2.27	CSI-CLI-00020575	CSI-CLI-00022852
4/18/2015	Arista Networks EOS User Manual Version 4.15.OF	CSI-CLI-00002332	CSI-CLI-00004615

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159. When analyzing Arista’s and Cisco’s documentation, I observed similarities (in some instances word-for-word matching) as between sentences, paragraphs, the structure and organization of text and figures, and other similarities that—based on my experience analyzing plagiarism—suggests that copying has taken place.

160. As one example of verbatim matching, and as Cisco alleged in its complaint, Arista’s user manuals include unique grammatical errors that existed in Cisco’s documentation. For example:¹⁵⁷

Cisco IOS Command	Arista EOS Command						
<p>service sequence-numbers</p> <p>To enable visible sequence numbering of system logging messages, use the <code>service sequence-numbers</code> command in global configuration mode. To disable visible sequence numbering of logging messages, use the <code>no</code> form of this command.</p> <p><code>service sequence-numbers</code> <code>no service sequence-numbers</code></p> <p>Syntax Description This command has no arguments or keywords.</p> <p>Defaults Disabled.</p> <p>Command Modes Global configuration</p> <p>Command History</p> <table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.0</td> <td>This command was introduced.</td> </tr> <tr> <td>12.2(33)SRA</td> <td>This command was integrated into Cisco IOS Release 12.2(33)SRA.</td> </tr> </tbody> </table> <p>Usage Guidelines Each system status message logged in the system logging process have a sequence reference number applied. This command makes that number visible by displaying it with the message. See the description of the logging commands for information on displaying logging messages.</p>	Release	Modification	12.0	This command was introduced.	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.	<p>service sequence-numbers</p> <p>The <code>service sequence-numbers</code> command enables visible sequence numbering of system logging messages. Each system status message logged in the system logging process have a sequence reference number applied. This command makes that number visible by displaying it with the message.</p> <p>The <code>no service sequence-numbers</code> and <code>default service sequence-numbers</code> commands disable visible sequence numbering of system logging messages by removing the <code>service sequence-numbers</code> command from <code>running-config</code>.</p> <p>Platform all</p> <p>Command Mode Global Configuration</p> <p>Command Syntax</p> <p><code>service sequence-numbers</code> <code>no service sequence-numbers</code> <code>default service sequence-numbers</code></p> <p>Examples</p> <ul style="list-style-type: none"> This command enables visible sequence numbering. <pre>switch(config)#service sequence-numbers switch(config)#</pre> <p><i>Arista 4.13.6F Manual, p. 380</i></p>
Release	Modification						
12.0	This command was introduced.						
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.						

Cisco IOS Configuration Fundamentals Command Reference (April 2010), at CF-522

“Each system status messages logged in the system logging process have a sequence reference number applied. This command makes that number visible by displaying it with the message.”

161. I confirmed these specific passages reside in both Cisco and Arista documents and contain the same words verbatim. Based on my experience, the likelihood of Arista independently writing these two particular sentences and including the exact same words (28

¹⁵⁷ See Second Amended Complaint at ¶ 55; see also Cisco IOS Configuration Fundamentals Command Reference at CF-522 (Apr. 2010); CSI-CLI-00016001, Arista 4.13.6F Manual at 380 (Apr. 2014).

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words total) in the exact same order with the exact same anomalous grammatical error is close to zero.

162. Arista’s user manuals also contain identical paragraphs to Cisco’s documentation. For example, Arista’s description of the “ip extcommunity-list” command contains identical descriptions of the “route target” and “site of origin” attributes, as shown below.

Route Target Extended Community Attribute

The route target (RT) extended community attribute is configured with the **rt** keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.

Site of Origin Extended Community Attribute

The site of origin (SOO) extended community attribute is configured with the **soo** keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.

IP Extended Community-List Configuration Mode

Named and numbered extended community lists can be configured in IP Extended community-list configuration mode. To enter IP Extended community-list configuration mode, enter the **ip extcommunity-list** command with either the **expanded** or **standard** keyword followed by the extended community list name. This configuration mode supports all of the functions that are available in global configuration mode. In addition, you can perform the following operations:

(CSI-CLI-00408381, Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IRP-118, CSI-CLI-00408502)

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ip extcommunity-list expanded

The **ip extcommunity-list expanded** command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs). The command uses regular expressions to name the communities specified by the list.

- **Route Target (rt)** attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites.
- **Site of Origin (soo)** attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.

(CSI-CLI-00016001, Arista User Manual v. 4.13.6F (4/14/2014), at 1540)

163. The only difference between these two examples is that Arista chose to use bullet points instead of sub-headings and then incorporated the attribute name for route target and site of origin into the introductory sentences instead of using them as sub-headings (as in Cisco’s documentation). Otherwise, the selections are identical.

164. As another example, Arista’s description of the “extended community” attributes in its user manual is identical to Cisco’s. Indeed, the only difference is that Arista chose to remove the words “are used to” and add “BGP” to the beginning of the sentence:

Usage Guidelines

Extended community attributes are used to configure, filter, and identify routes for virtual routing and forwarding instances (VRFs) and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).

The **match extcommunity** command is used to configure match clauses that use extended community attributes in route maps. All of the standard rules of match and set clauses apply to the configuration of extended community attributes.

(CSI-CLI-00261229, Cisco IOS IP Routing: EIGRP Command Reference (2011), at 92, CSI-CLI-00261326)

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BGP extended communities configure, filter, and identify routes for virtual routing, forwarding instances (VRFs), and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).

Extended community clauses provide route target and site of origin parameter options:

(CSI-CLI-00016001, Arista User Manual v. 4.13.6F (4/14/2014), at 1502)

165. Arista’s user manuals also include similar structural elements that are virtually identical to Cisco’s documentation, such as the re-produced output for the “show port-security” command (shown below). Not only the text is virtually identical, but that Arista’s table is structured and formatted in the same way with the same number of columns (five) arranged in the same order as Cisco’s table:

Command Examples This example shows the output from the **show port-security** command when you do not enter any options:

```
Router# show port-security
```

Secure Port	MaxSecureAddr	CurrentAddr	SecurityViolation	Security
Action	(Count)	(Count)	(Count)	
-----	-----	-----	-----	-----
Fa5/1	11	11	0	Shutdown
Fa5/5	15	5	0	Restrict
Fa5/11	5	4	0	Protect
-----	-----	-----	-----	-----

(CSI-CLI-00261229 - CSI-CLI-00261480, Cisco IOS IP Routing: EIGRP Command Reference (2011), at 92, CSI-CLI-00261326)

Example

- These commands enable MAC security on Ethernet interface 7, set the maximum number of assigned MAC addresses to 2, assigns two static MAC addresses to the interface, and clears the dynamic MAC addresses for the interface.

```
switch(config)#interface ethernet 7
switch(config-if-Et7)#switchport port-security
switch(config-if-Et7)#switchport port-security maximum 2
switch(config-if-Et7)#exit
switch(config)#mac address-table static 0034.24c2.8f11 vlan 10 interface ethernet 7
switch(config)#mac address-table static 4464.842d.17ce vlan 10 interface ethernet 7
switch(config)#clear mac address-table dynamic interface ethernet 7
switch(config)#show port-security
```

Secure Port	MaxSecureAddr	CurrentAddr	SecurityViolation	Security Action
(Count)	(Count)	(Count)	(Count)	
-----	-----	-----	-----	-----
Et7	2	2	0	Shutdown
-----	-----	-----	-----	-----

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(CSI-CLI-00016001, Arista User Manual v. 4.13.6F (4/14/2014), at 624)

166. Another example of strikingly similar structure arrangements—coupled with nearly verbatim word matching—exists in the description of security levels, Arista and Cisco list the same number/name for various severity levels with identical descriptions of each level:

<i>severity-level</i>	<p>(Optional) The number or name of the desired severity level at which messages should be logged. Messages at or numerically lower than the specified level are logged. Severity levels are as follows (enter the number or the keyword):</p> <p>[0 emergencies] —System is unusable</p> <p>[1 alerts]—Immediate action needed</p> <p>[2 critical]—Critical conditions</p> <p>[3 errors]—Error conditions</p> <p>[4 warnings]—Warning conditions</p> <p>[5 notifications]—Normal but significant conditions</p> <p>[6 informational]—Informational messages</p> <p>[7 debugging]—Debugging messages</p>
-----------------------	--

(CSI-CLI-00291602, Cisco IOS Cisco Networking Services Command Reference (2013), at 91)

- **CONDITION** Specifies condition level. Options include:
 - <no parameter> Specifies default condition level.
 - **severity** <condition-level> Name of the severity level at which messages should be logged.

Valid *condition-level* options include:

- * 0 or **emergencies** System is unusable
- * 1 or **alerts** Immediate action needed
- * 2 or **critical** Critical conditions
- * 3 or **errors** Error conditions
- * 4 or **warnings** Warning conditions
- * 5 or **notifications** Normal but significant conditions
- * 6 or **informational** Informational messages
- * 7 or **debugging** Debugging messages

(CSI-CLI-00018146, Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 155)

167. I have attached Exhibit Copying-1 that sets forth additional instances of similarities found between Arista’s user manuals and Cisco’s copyrighted documentation. As

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shown above and in Exhibit Copying-1, Arista’s manuals track Cisco’s copyrighted documents word-for-word in many places and/or they include nearly identical sentences and structural elements, such as tables and lists. As discussed below, Arista’s manuals also copy examples of Cisco’s screen outputs, and Arista also copied those outputs into EOS.

C. Cisco’s CLI Command Expressions Compared to Arista’s CLI Command Expressions

168. I understand that Cisco has asserted that Arista copied over 500 specific multi-word command expressions that are elements of the Cisco IOS copyrighted works.

169. Arista does not dispute that its products and documentation such as product manuals use these multi-word command expressions.¹⁵⁸ For example, Arista admitted such use in its answer to Cisco’s original complaint:¹⁵⁹

23 | 53. Arista admits that it uses the IOS command expressions included in Exhibit 1 to
24 | Cisco’s Complaint. Arista denies any remaining allegations of paragraph 53.

170. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

¹⁵⁸ [REDACTED]

¹⁵⁹ Arista’s Answer to the Complaint (Dkt. 36) at ¶ 53.

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[REDACTED]

171. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

This image is a completely blank, solid black rectangle. It contains no visible text, figures, or other graphical elements.

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173. To further confirm Arista’s use of the copied multi-word command expressions, I inputted commands into working versions of Arista’s switch running EOS made available by Arista in this litigation at its lawyers’ office. I also tested and inspected an Arista DCS-7048T-4S device running EOS 4.4.0 into which I also inputted multi-word command expressions.

174. When I input the commands, the Arista switch running EOS provided an output or response (not an error message) with the same look and feel as if I had inputted the commands into a Cisco device, which tells me that the multi-word command expressions are used in Arista’s EOS in precisely the same way as they are in Cisco’s IOS, and that a user would have a hard time knowing they were using an Arista switch instead of a Cisco switch. A log confirming my testing is provided as Exhibit Copying-7. The log confirms that EOS understands and knows how to respond to each of the commands, and that they are an integral part of EOS, including the CLI program with which the user interacts. I reserve the right to—and expect that as part of my trial testimony I will—demonstrate additional testing at trial, whether that be live or via video.

175. I do note that some of the multi-word command expressions Arista copied could not be run on the Arista switch in the limited environment provided by Arista. For certain commands to provide outputs, a live network environment is required to be set up and configured. During my inspections, however, the switches that Arista provided were not connected to a network or configured by Arista to simulate a live networking environment. Accordingly, my testing of commands that require a configured network was limited by the set up provided by Arista. Those limitations do not, however, impact my opinions, as I was able to

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confirm through documentations and Arista’s interrogatory responses that the commands expressions were and are implemented in EOS.¹⁶⁰

176. I further note that nothing about network device hardware demands that manufacturers like Arista follow the particular structure and organization of the asserted command expressions that Arista has implemented. Nor are the multi-word command expression structures dictated by any external factors, such as industry standards (as discussed in more detail below). As discussed above, in designing a command structure, engineers are free to select a design that which reflects their creative, subjective views on how computer programs should be implemented. This was true when Cisco first designed its CLI, and it is equally true now. Arista avoided this labor-intensive process by adopting Cisco’s established command structure.

D. Cisco’s CLI Command Modes And Prompts Compared to Arista’s Command Modes And Prompts

177. Exhibit C to Cisco’s Second Supplemental Response to Interrogatory No. 2 identifies certain command modes and associated prompts that were created by Cisco and that Cisco alleges were copied by Arista. Cisco alleges that Arista’s use of these command modes and prompts extends to interface-, feature-, protocol- and other more specific command modes and sub-modes, with associated prompts.

178. I independently verified the information in Exhibit C and agree with Cisco that Arista, in fact, uses these same command modes and prompts.

¹⁶⁰ See CSI-CLI-00007244, CSI-CLI-00007473, CSI-CLI-00006858, CSI-CLI-00007841, CSI-CLI-00010517, CSI-CLI-00008985, CSI-CLI-00014141, CSI-CLI-00016001, CSI-CLI-00011973, CSI-CLI-00018146, CSI-CLI-00000084, CSI-CLI-00004616, CSI-CLI-00020575, CSI-CLI-00002332; [REDACTED] [REDACTED]

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179. To start, I note that Arista does not dispute that it uses the command modes and prompts that Cisco has accused it of copying, as it has admitted such use in its answer to Cisco’s complaint.¹⁶¹

54. Arista admits that it uses the command modes and prompts identified under the subheading “Arista EOS Command Modes” in paragraph 54. Arista denies any remaining allegations of paragraph 54.

180. Arista’s user manuals further confirm that across all versions of EOS, Arista has used the asserted command modes and prompts.¹⁶² For example:¹⁶³

¹⁶¹ Arista’s Answer to the Second Amended Complaint (Dkt. 65) at ¶ 54.

¹⁶² Arista Networks EOS User Manual Version 4.4.0 (CSI-CLI-00007473), Arista Networks EOS User Manual Version 4.0.1 (CSI-CLI-00007244), Arista Networks EOS User Manual Version 4.6.2 (CSI-CLI-00006858), Arista Networks EOS User Manual Version 4.10.0 (CSI-CLI-00007841), Arista Networks EOS User Manual Version 4.11.1 - Rev. 2 (CSI-CLI-00010517), Arista Networks EOS User Manual Version 4.11.2.1 (CSI-CLI-00008985), Arista Networks EOS User Manual Version 4.12.4 (CSI-CLI-00014141), Arista Networks EOS User Manual Version 4.13.7M (CSI-CLI-00011973), Arista Networks EOS User Manual Version 4.14.3F - Rev. 2 (CSI-CLI-00018146), Arista Networks EOS User Manual Version 4.14.5F - Rev. 2 (CSI-CLI-00000084), Arista Networks EOS User Manual Version 4.14.6M (CSI-CLI-00004616), Arista Networks EOS User Manual Version 4.15.0F - Rev. 2.27 (CSI-CLI-00020575), Arista Networks EOS User Manual Version 4.15.0F (CSI-CLI-00002332), Arista Networks EOS User Manual Version 4.13.6F (CSI-CLI-00016001).

¹⁶³ CSI-CLI-00018146 at -264.

3.4 Command Modes

Command modes define the user interface state. Each mode is associated with commands that perform a specific set of network configuration and monitoring tasks.

- Section 3.4.1: Mode Types lists the available modes.
- Section 3.4.2: Navigating Through Command Modes lists mode entry and exit commands.
- Section 3.4.3: Command Mode Hierarchy describes the mode structure.
- Section 3.4.4: Group-Change Configuration Modes describes editing aspects of these modes.

3.4.1 Mode Types

The switch includes these command modes:

- **EXEC:** EXEC mode commands display system information, perform basic tests, connect to remote devices, and change terminal settings. When logging into EOS, you enter EXEC mode.

EXEC mode prompt: `switch>`

- **Privileged EXEC:** Privileged EXEC mode commands configure operating and global parameters. The list of Privileged EXEC commands is a superset of the EXEC command set. You can configure EOS to require password access to enter Privileged EXEC from EXEC mode.

Privileged EXEC mode prompt: `switch#`

- **Global Configuration:** Global Configuration mode commands configure features that affect the entire system, such as system time or the switch name.

Global Configuration mode prompt: `switch(config)#`

- **Interface Configuration:** Interface configuration mode commands configure or enable Ethernet, VLAN, and Port-Channel interface features.

Interface Configuration mode prompt: `switch(config-if-Et24)#`

- **Protocol specific mode:** Protocol specific mode commands modify global protocol settings. Protocol specific mode examples include **ACL Configuration** and **Router BGP Configuration**.

The prompt indicates the active command mode. For example, the Router BGP command prompt is `switch(config-router-bgp)#`

181. I further confirmed that Arista’s EOS uses these commands and prompts through my own testing of three Arista switches. For each of the switches, I logged into the switch using the admin account. This account provides “EXEC” mode access. I then changed modes to “Privileged EXEC” mode by typing “enable” or “en.” I note that on the switches I tested there was not a separate enable password. I also tested entering the “Global Configuration” mode by typing “configure” or “config” and entered in exemplary interfaces to enter the “Interface Configuration” mode. In each instance, the modes and the commands available in each mode were consistent with the manuals and documentation I reviewed.

182. It is evident from analyzing the modes and prompts that they are very similar if not identical to Cisco’s modes and prompts. The following table illustrates the similarities:

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Cisco Command Mode	Cisco Prompt	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt
User EXEC	router>	EXEC	switch>
Privileged EXEC	router#	Privileged EXEC	switch#
Global Configuration	router(config)#	Global Configuration	switch(config)#
Interface Configuration	router(config-if)#	Interface Configuration	switch(config-if)#
User EXEC	switch>	EXEC	switch>
Privileged EXEC	switch#	Privileged EXEC	switch#
EXEC	switch#	Privileged EXEC	switch#
Global Configuration	switch(config)#	Global Configuration	switch(config)#
Interface Configuration	switch(config-if)#	Interface Configuration	switch(config-if)#

183. With respect to the modes, six out of eight modes are word-for-word identical.

With respect to the three modes that are not verbatim copies, there is nevertheless 50% overlap between Arista’s modes and Cisco’s modes. The difference arises because Arista chose to use the mode “EXEC” instead of “User EXEC” (*i.e.*, dropping the single word “User”) and “Privileged EXEC” instead of “EXEC” switches (*i.e.*, adding a single word “Privileged”).

184. With respect to the prompts, the switch-related prompts are identical across five prompts. There are no differences. And when I compared Cisco’s router prompts to Arista’s switching prompts, I note that the overall structures are the same. The only difference is that Arista uses the term “switch” instead of “router”.

185. My analysis and conclusions apply to all versions of EOS accused in this case. My review of the materials in this case (including Arista’s user manuals) shows that these modes and prompts have been used in every version of EOS accused in this case. *See Exhibit Copying-4.*

E. Cisco’s CLI Command Hierarchy Compared to Arista’s CLI Command Hierarchy

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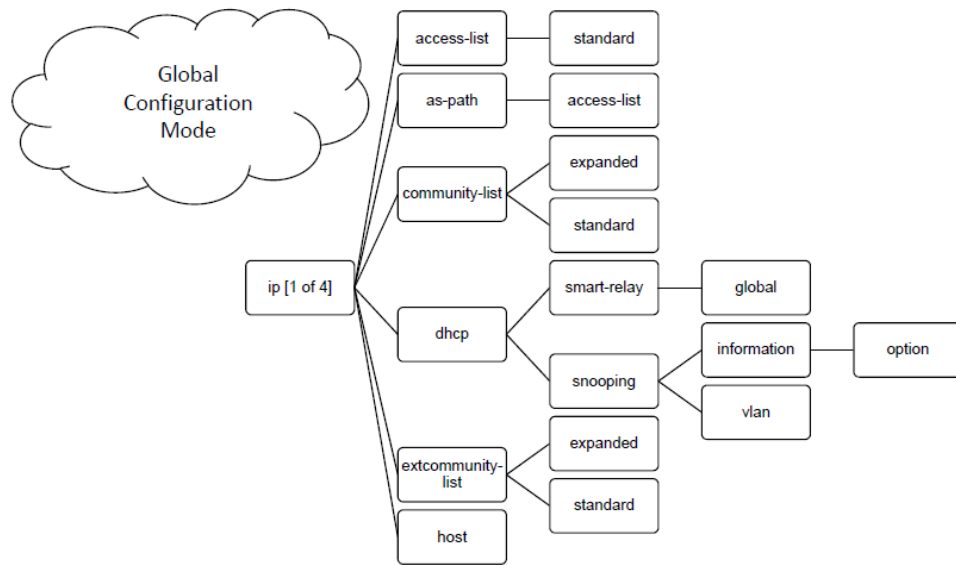
186. I understand that Cisco contends that Arista copied the following command hierarchies as well:

- “aaa” command hierarchy
- “bgp” command hierarchy
- “clear” command hierarchy
- “dot1x” command hierarchy
- “ip” command hierarchy
- “ipv6” command hierarchy
- “neighbor” command hierarchy
- “show” command hierarchy
- “snmp-server” command hierarchy
- “spanning-tree” command hierarchy
- “vrrp” command hierarchy

187. The command hierarchies in Amended Exhibit D1-D26 to Cisco’s interrogatory responses contain Cisco’s copyrighted command expressions that Arista copied in whole or in part by Arista. I have independently verified their contents and accuracy. I also have performed testing on Cisco and Arista devices through which I confirmed the information in Amended Exhibits D1-D26.

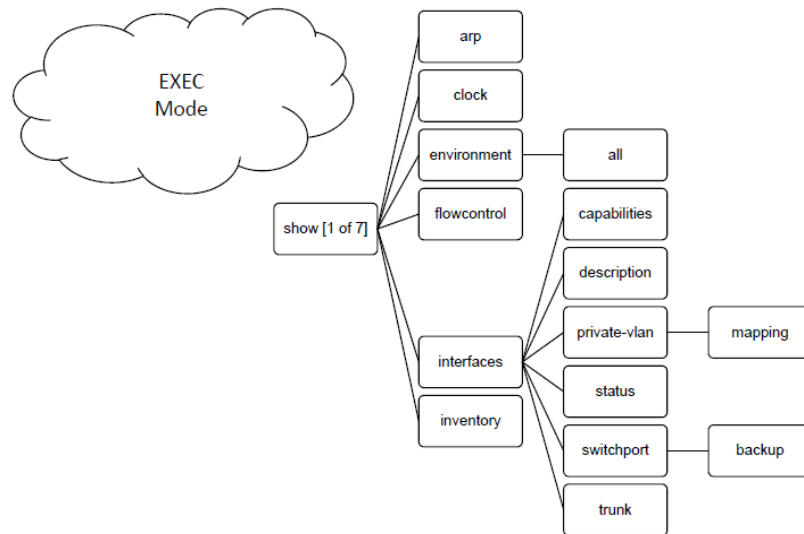
188. The hierarchies contained in Amended Exhibits D1-D26 identify multi-word command expressions. The hierarchies themselves are specific organizational and structural elements of Cisco’s copyrighted works. The hierarchies are creative constructs that help a user’s thought process when interacting with a network device. The hierarchies can be expressed visually by tree structures, for example, one “ip” hierarchy can be expressed as follows:

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(D26 – NX-OS 6.2)

And a “show” hierarchy can be expressed as follows:



(D13 – IOS 15.4)

189. Each command hierarchy is associated with a configuration mode (*e.g.*, the “enable” EXEC command in EOS and IOS). What that means is that the command hierarchy

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can only be used and accessed in that specific configuration mode. Associating modes with hierarchies adds an additional layer to the organization and structure of the CLI.

190. Based on my review of the documents, testimony, switches, and programs, it is my opinion that Arista uses the same or similar multi-word commands, with the same or similar multi-word syntaxes, organized into the same or similar hierarchies, and associated with the same or similar modes that are in Cisco’s copyrighted works. These hierarchies are contained in Cisco’s and Arista’s respective product documentation and programs.¹⁶⁴ In my opinion, Arista’s copying also is shown by its reproduction and use of the individual command expression in the same modes as the commands are located in Cisco’s copyrighted works.

191. The following lists shows select examples of Arista’s copying of hierarchies and sub-hierarchies contained in Cisco’s copyrighted works:¹⁶⁵

“aaa” command hierarchy, including the following exemplary multiword command(s) within the “aa group server” sub-hierarchy:	“aaa group server radius” “aaa group server tacacs+”
“bgp” command hierarchy, including the following exemplary multiword command(s) within that hierarchy:	“bgp client-to-client reflection” “bgp confederation identifier”
“clear” command hierarchy, including the following exemplary multiword command(s) within the “clear ip” sub-hierarchy:	“clear ip igmp group” “clear ip nat translation”
“dot1x” command hierarchy, including the following exemplary multiword command(s)	“dot1x max-reauth-req”
“ip” command hierarchy, including the following exemplary multi-word command(s) within that hierarchy:	“ip as-path access-list”
“ip dhcp” sub-hierarchy, including the following exemplary multi-word command(s):	“ip dhcp snooping”
“ip igmp” sub-hierarchy, including the following exemplary multi-word command(s):	“ip igmp last-member-query-count”

¹⁶⁴ CSI-CLI-00007473, CSI-CLI-00007244, CSI-CLI-00006858, CSI-CLI-00007841, CSI-CLI-00010517, CSI-CLI-00008985, CSI-CLI-00014141, CSI-CLI-00011973, CSI-CLI-00018146, CSI-CLI-00000084, CSI-CLI-00004616, CSI-CLI-00020575, CSI-CLI-00002332, CSI-CLI-00016001.

¹⁶⁵ See Cisco’s Second Amended Complaint.

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	“ip igmp static-group”
“ip msdp” sub-hierarchy, including the following exemplary multi-word command(s):	“ip msdp sa-filter in”
“ip ospf” sub-hierarchy, including the following exemplary multi-word command(s):	“ip ospf shutdown” “ip ospf transmit-delay”
“ip pim” sub-hierarchy, including the following exemplary multi-word command(s):	“ip pim dr-priority” “ip pim query-interval”
“ipv6” command hierarchy, including “ipv6 nd” sub-hierarchy, including the following exemplary multi-word command(s):	“ipv6 nd managed-config-flag” “ipv6 nd ns-interval”
“ipv6 ospf” sub-hierarchy, including the following exemplary multi-word command(s):	“ipv6 ospf cost”
“neighbor” command hierarchy, including the following exemplary multi-word command(s):	“neighbor ebgp-multihop” “neighbor route-reflector-client”
“show” command hierarchy, including the following exemplary multiword command(s) ¹⁶⁶ :	“show aaa method-lists”
“show interfaces” sub-hierarchy, including the following exemplary multi-word command(s):	“show interfaces private-vlan mapping” “show ip” sub-hierarchy (at least 50 matches), including:
“show ip bgp” sub-hierarchy (at least 8 matches), including the following exemplary multi-word command(s):	“show ip bgp regexp” “show ip mroute”
“show ipv6” sub-hierarchy, including “show ipv6 ospf” sub-hierarchy, including the following exemplary multi-word command(s):	“show ipv6 ospf border-routers” “show ipv6 route” sub-hierarchy
“snmp-server” command hierarchy (at least 12 matches), including the following exemplary multi-word command(s):	“snmp-server location”
“spanning-tree” command hierarchy, including the following exemplary multi-word command(s):	“spanning-tree bpduguard”
“vrrp” command hierarchy (at least 10 matches), including the following exemplary multiword command(s):	“vrrp timers advertise”

¹⁶⁶ [REDACTED]

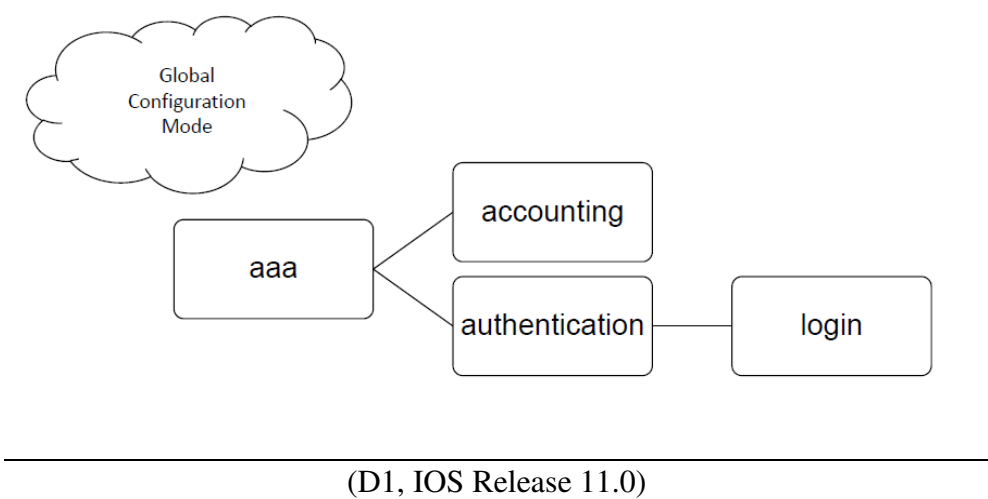
[REDACTED]

[REDACTED]

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192. Additional examples that compare Cisco’s command hierarchies illustrated visually in a tree structure compared to Arista’s use of those same hierarchies in their documents are shown below:

Example 1: “aaa” hierarchy

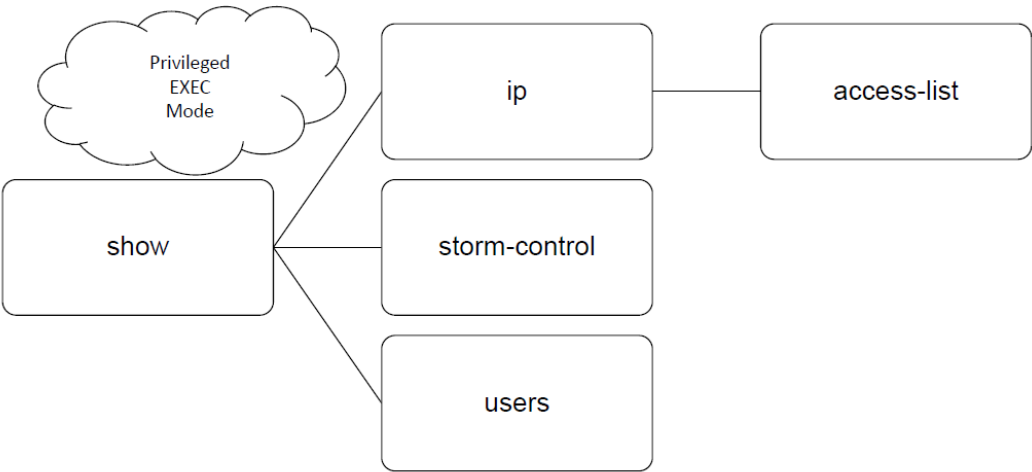


AAA Configuration	
aaa accounting.	105
aaa authentication enable	106
aaa authentication login.	107
	108

(CSI-CLI-00007850, EOS 4.10.0)

Example 2: “show” hierarchy

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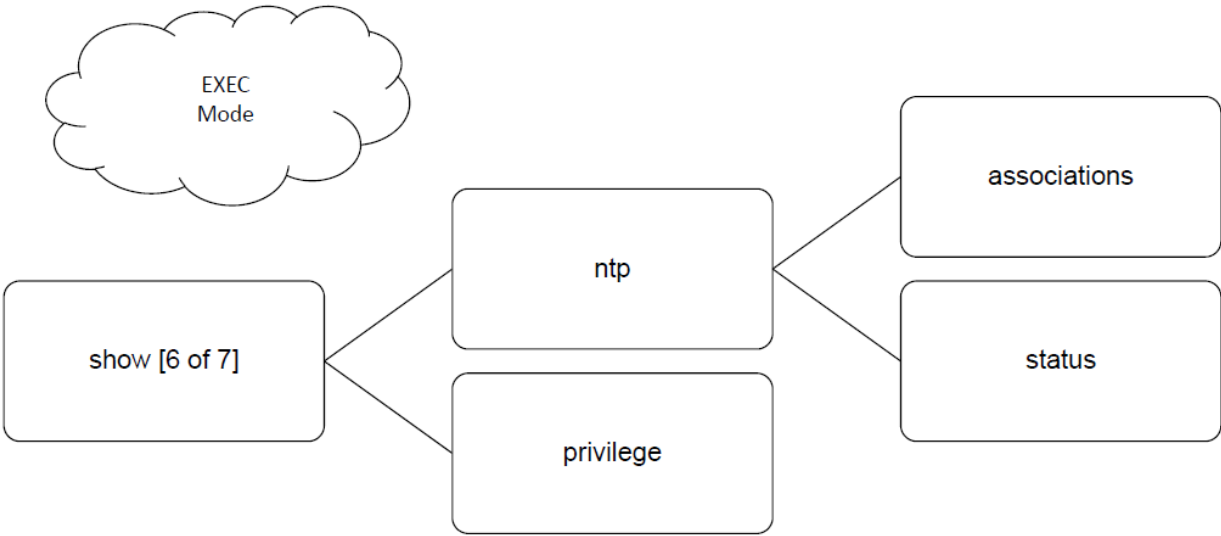


(D1, IOS Release 11.0)

show ip access-lists	470
.....	471
show storm-control	472

(CSI-CL1-00007850, EOS 4.10.0)

Example 3: another “show” hierarchy



(D1, IOS Release 11.0)

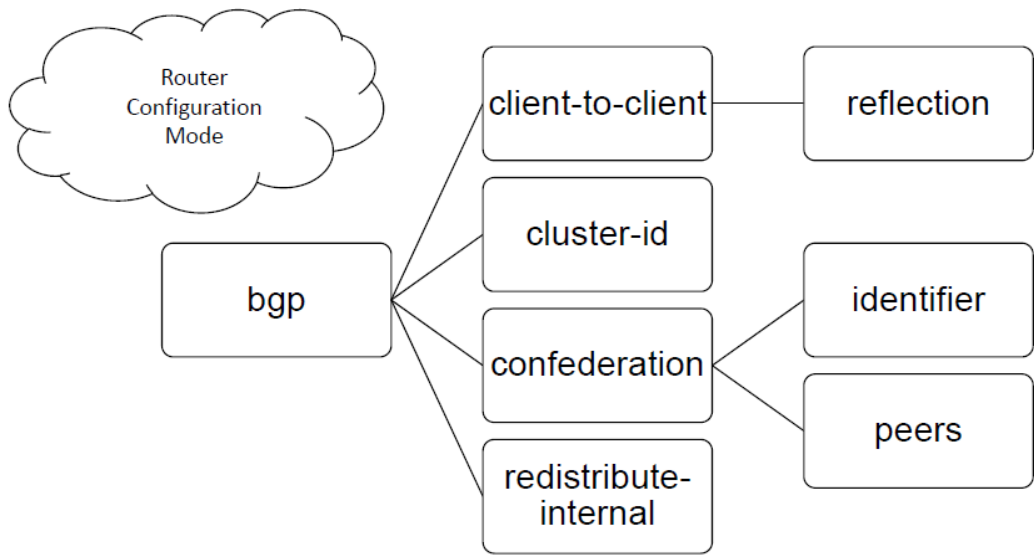
show privilege	132
----------------------	-----

show ntp associations 184

show ntp status 185

(CSI-CLI-00007850, EOS 4.10.0)

Example 4: “bgp” hierarchy



(D1, IOS Release 11.0)

Border Gateway Protocol 1543

address-family 1564

aggregate-address 1565

bgp client-to-client reflection 1567

bgp cluster-id 1568

bgp confederation identifier 1569

bgp confederation peers 1570

[REDACTED] 1571

[REDACTED] 1573

[REDACTED] 1574

bgp log neighbor changes 1575

bgp redistribute-internal (BGP) 1576

(CSI-CLI-00018146, EOS 4.14.3F)

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193. Because the evidence of Arista's use of Cisco's command hierarchies is voluminous, I have summarized the similarities in Exhibit Copying-5, which is incorporated here by reference.

F. Cisco's CLI Command Responses Compared to Arista's CLI Command Responses

194. As explained above, another aspect of Cisco's CLI is the textual, screen output generated by the CLI as feedback when the user inputs a particular command. Cisco contends that in many instances, Arista provides output displays in EOS that are similar if not identical to the displays in Cisco's CLI. I agree that there are very close similarities between the screen outputs in Cisco's CLI and Arista's CLI. In some instance, in fact, it is almost impossible for a user to tell if they are using a Cisco device or an Arista device—the similarities are that close.

195. To start, as I noted above in my summary of the direct evidence of Arista's copying, [REDACTED]

167

Response	Percentage
Yes, the U.S. should take action to address climate change	95%
No, the U.S. should not take action to address climate change	5%

167

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197. This literal copying of text in the screen outputs is evident throughout Arista’s EOS. For example, Cisco’s Exhibit E to its interrogatory response provides a listing of command responses from Cisco’s copyrighted works that Cisco’s claims are identical or similar in by Arista’s EOS CLI. In addition, I understand that Cisco contends that Arista has copied the non-literal elements of Cisco’s command responses, including their structure, sequence and organization as also shown in Exhibit E.

198. I have independently confirmed that the examples shown in Exhibit E exist in Arista’s product documentation, and I agree that Arista’s outputs are identical or similar to Cisco’s.

199. For example, Cisco’s CLI implements a command called “show snmp” which displays the following output (show in Cisco’s product documentation):¹⁶⁸

Examples

The following is sample output from the `show snmp` command:

```

Router# show snmp
ChassisID: L2X61083
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
  0 Input queue packet drops (Maximum queue size 1000)
0 SNMP packets output
  0 Too big errors (Maximum packet size 1500)
  0 No such name errors
  0 Bad values errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
SNMP logging: enabled
SNMP trap Queue: 0 dropped due to resource failure.

```

¹⁶⁸ CSI-CLI-00327842, Cisco IOS 15.4, Cisco IOS SNMP Support Command Reference at 83, CSI-CLI-00327934 (2013).

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200. Arista’s EOS also implements the “show snmp” multiword command expression and generates a similar screen, as shown below (in Arista’s product documentation):¹⁶⁹

Example

- This command configures xyz-1234 as the chassis-ID string, then displays the result.

```
switch(config)#snmp-server chassis-id xyz-1234
switch(config)#show snmp
Chassis: xyz-1234                                     <---chassis ID

8 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  8 Number of requested variables
  0 Number of altered variables
  4 Get-request PDUs
  4 Get-next PDUs
  0 Set-request PDUs
21 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  8 Response PDUs
  0 Trap PDUs
SNMP logging: enabled
Logging to taccon.162
SNMP agent enabled
switch(config)#
```

201. Based on my analysis, Arista’s exemplary output is similar to Cisco’s display for the “show snmp” command not only with respect to the text and structure but also with respect to the sequence in which these lines would appear to a user.

202. There also is evidence of similarities between the Cisco and Arista interactive “help” screens. In response to the “help” command, both Cisco’s and Arista’s operating systems display the following text (which was originally created by Cisco in version 9.21 of IOS):

¹⁶⁹ CSI-CLI-00018146, Arista User Manual v. 4.14.3F (Rev. 2) at 1967-68, CSI-CLI-00020112-13 (Oct. 2, 2014).

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```
Switch>help
Help may be requested at any point in a command by entering
a question mark '?'. If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
  command argument (e.g. 'show ?') and describes each possible
  argument.
2. Partial help is provided when an abbreviated argument is entered
  and you want to know what arguments match the input
  (e.g. 'show pr?').
```

(Cisco’s Help Screen¹⁷⁰)

```
localhost#help
Help may be requested at any point in a command by entering
a question mark '?'. If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
  command argument (e.g. 'show ?') and describes each possible
  argument.
2. Partial help is provided when an abbreviated argument is entered
  and you want to know what arguments match the input
  (e.g. 'show pr?').
localhost#
```

(Arista’s Identical Help Screen in EOS 4.4.0¹⁷¹)

203. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]¹⁷² What this also evidences is that Arista copied text from Cisco’s documentation into its EOS, which another form of copying.

¹⁷⁰ See Exhibit Copying-7; see also CSI-CLI-00540145 at CSI-CLI-00540184.

¹⁷¹ See Exhibit Copying-7; [REDACTED]

¹⁷² [REDACTED]

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204. I also have conducted testing on operational Cisco and Arista switches to confirm the similarities in the outputs that the documentation shows. In short, I have confirmed that there are numerous outputs that are similar or identical as between Cisco’s IOS and Arista’s EOS when running on a Cisco or Arista switch. Exemplary screen shots showing similar outputs are provided below.

205. One of the commands I tested was the “show ip route” command. Because none of the switches had any significant configuration information entered for them and because none of the switches were connected to other switches or routers there was no substantive information that could be displayed for the “show ip route” command. However, consistent with what was described in the respective manuals, a key was displayed for the type of information that would be displayed if any of the switches had been further configured. The displayed information for the Cisco 4948E is as follows:

```
Switch#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set
```

206. The version information for the Arista 7010T is as follows:

```
localhost#show ip route
Codes: C - connected, S - static, K - kernel,
       O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1,
       E2 - OSPF external type 2, N1 - OSPF NSSA external type 1,
       N2 - OSPF NSSA external type2, B I - iBGP, B E - eBGP,
       R - RIP, I - ISIS, A B - BGP Aggregate, A O - OSPF Summary,
       NG - Nexthop Group Static Route

Gateway of last resort is not set
```

207. The version information for the Arista 7554 is as follows:

```
localhost(s1)#show ip route
Codes: C - connected, S - static, K - kernel,
       O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1,
       E2 - OSPF external type 2, N1 - OSPF NSSA external type 1,
```

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```

N2 - OSPF NSSA external type2, B I - iBGP, B E - eBGP,
R - RIP, I - ISIS, A B - BGP Aggregate, A O - OSPF Summary,
NG - Nexthop Group Static Route

```

```

Gateway of last resort is not set

```

```

! IP routing not enabled

```

208. In the next example, I entered some basic configuration information for the Simple Network Management Protocol (SNMP). The configuration example was taken from an Arista manual, but it does the same thing regardless of whether the switch is a Cisco switch or an Arista switch. Configuring the switch in this way allowed me to display basic statistics about SNMP. Again, because none of the switches were connected to other switches, there were no values that had been collected. Also of note, in order to configure the SNMP server on any one of the switches I had to be in global configuration mode. I entered the global configuration mode the same way on each switch—by typing “en” for enable and then “config” to enter global configuration. The displayed information for the Cisco 4948E is as follows:

```

Switch>en
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#snmp-server user tech-1 tech-sup v3
Switch(config)#exit
Switch#show snmp
Chassis: CAT1552S66E
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
  0 Input queue packet drops (Maximum queue size 1000)
0 SNMP packets output
  0 Too big errors (Maximum packet size 1500)
  0 No such name errors
  0 Bad values errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
SNMP global trap: disabled
SNMP agent enabled

```

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SNMP logging: disabled

209. The show snmp for the Arista 7010T is as follows:

```
localhost#config
localhost(config)#snmp-server user tech-1 tech-sup v3
localhost(config)#exit
localhost#show snmp
Chassis: HSH16130550
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
0 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
Access Control
  0 Users
  1 Groups
  0 Views
SNMP logging: disabled
SNMP agent enabled in VRFs: default
1 warnings
! Group "tech-sup" of user "tech-1" is not configured
```

210. The show snmp for the Arista 7554 is as follows:

```
localhost(s1)>en
localhost(s1)#config
localhost(s1)(config)#snmp-server user tech-1 tech-sup v3
localhost(s1)(config)#exit
localhost(s1)#show snmp
Chassis: HSH14525015
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
0 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
Access Control
  0 Users
```


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```

1 Groups
0 Views
SNMP logging: disabled
SNMP agent enabled in VRFs: default
1 warnings
! Group "tech-sup" of user "tech-1" is not configured

```

211. The next example looks at the Internet Group Management Protocol (IGMP), a protocol used to support multicast group membership registration. IGMP is considered a “snooping” protocol because switches are traditionally Layer 2 devices, but IGMP snooping requires looking at Layer 3 packets. With the “show ip igmp snooping” command, statistics about IGMP snooping are displayed. The displayed information for the Cisco 4948E is as follows:

```

Switch#show ip igmp snooping
Global IGMP Snooping configuration:
-----
IGMP snooping                : Enabled
IGMPv3 snooping              : Enabled
Report suppression           : Enabled
TCN solicit query            : Disabled
TCN flood query count        : 2
Last Member Query Interval   : 1000

Vlan 1:
-----
IGMP snooping                : Enabled
CAPWAP enabled               : Disabled
IGMPv2 immediate leave       : Disabled
Explicit host tracking        : Enabled
Multicast router learning mode : pim-dvmrp
CGMP interoperability mode    : IGMP_ONLY
Last Member Query Interval   : 1000

```

212. The show ip igmp snooping for the Arista 7010T is as follows:

```

localhost#show ip igmp snooping
Global IGMP Snooping configuration:
-----
IGMP snooping                : Enabled
Robustness variable           : 2
Report flooding               : Disabled

Vlan 1 :
-----
IGMP snooping                : Enabled
IGMPv2 immediate leave       : Enabled
Multicast router learning mode : pim-dvmrp
IGMP max group limit         : No limit set
Recent attempt to exceed limit : No
Report flooding              : Disabled
IGMP snooping pruning active  : False

```

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Flooding traffic to VLAN : True

213. The show ip igmp snooping for the Arista 7554 is as follows:

```
localhost(s1)#show ip igmp snooping
Global IGMP Snooping configuration:
-----
IGMP snooping           : Enabled
Robustness variable     : 2
Report flooding         : Disabled

Vlan 1 :
-----
IGMP snooping           : Enabled
IGMPv2 immediate leave  : Enabled
Multicast router learning mode : pim-dvmrp
IGMP max group limit    : No limit set
Recent attempt to exceed limit : No
Report flooding         : Disabled
IGMP snooping pruning active : False
Flooding traffic to VLAN : True
```

214. The next command is used to show a wide range of information about the interfaces on the switch. The displayed information for the Cisco 4948E is as follows:

```
Switch#show interfaces FastEthernet 1
FastEthernet1 is down, line protocol is down
  Hardware is Fast Ethernet for out of band management, address is c464.1342.efbf (bia c464.1342.efbf)
  Internet address is 10.1.1.35/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Unknown duplex, Unknown Speed, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes
    Received 0 broadcasts (0 IP multicasts)
    0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog
    0 input packets with dribble condition detected
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
```

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215. The show interfaces information for the Arista 7010T is as follows:

```
localhost#show interface ethernet 1
Ethernet1 is down, line protocol is down (notconnect)
  Hardware is Ethernet, address is 444c.a88f.f7fa (bia 444c.a88f.f7fa)
  Ethernet MTU 9214 bytes
  Auto-duplex, Auto-speed, auto negotiation: on, uni-link: unknown
  Down 35 seconds
  2 link status changes since last clear
  Last clearing of "show interface" counters never
  5 minutes input rate 0 bps (- with framing overhead), 0 packets/sec
  5 minutes output rate 0 bps (- with framing overhead), 0 packets/sec
    0 packets input, 0 bytes
    Received 0 broadcasts, 0 multicast
    0 runts, 0 giants
    0 input errors, 0 CRC, 0 alignment, 0 symbol, 0 input discards
    0 PAUSE input
    0 packets output, 0 bytes
    Sent 0 broadcasts, 0 multicast
    0 output errors, 0 collisions
    0 late collision, 0 deferred, 0 output discards
    0 PAUSE output
```

216. The show interfaces information for the Arista 7554 is as follows:

```
localhost(sl)#show interfaces Ethernet 3/1/1
Ethernet3/1/1 is down, line protocol is down (notconnect)
  Hardware is Ethernet, address is 0000.0000.0000 (bia 001c.7348.6dac)
  Ethernet MTU 9214 bytes
  Unconfigured, Unconfigured, auto negotiation: off, uni-link: unknown
  0 link status changes since last clear
  Last clearing of "show interface" counters never
  5 minutes input rate 0 bps (- with framing overhead), 0 packets/sec
  5 minutes output rate 0 bps (- with framing overhead), 0 packets/sec
    0 packets input, 0 bytes
    Received 0 broadcasts, 0 multicast
    0 runts, 0 giants
    0 input errors, 0 CRC, 0 alignment, 0 symbol, 0 input discards
    0 PAUSE input
    0 packets output, 0 bytes
    Sent 0 broadcasts, 0 multicast
    0 output errors, 0 collisions
    0 late collision, 0 deferred, 0 output discards
    0 PAUSE output
```

217. The summary of my logs and analysis is summarized in Exhibit Copying-7, which is attached hereto and incorporated by reference.

218. Because the evidence of Arista’s copying Cisco’s outputs is voluminous, I have summarized the similarities in Exhibit Copying-3, which is incorporated here by reference.

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219. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED].¹⁷⁴

[REDACTED]

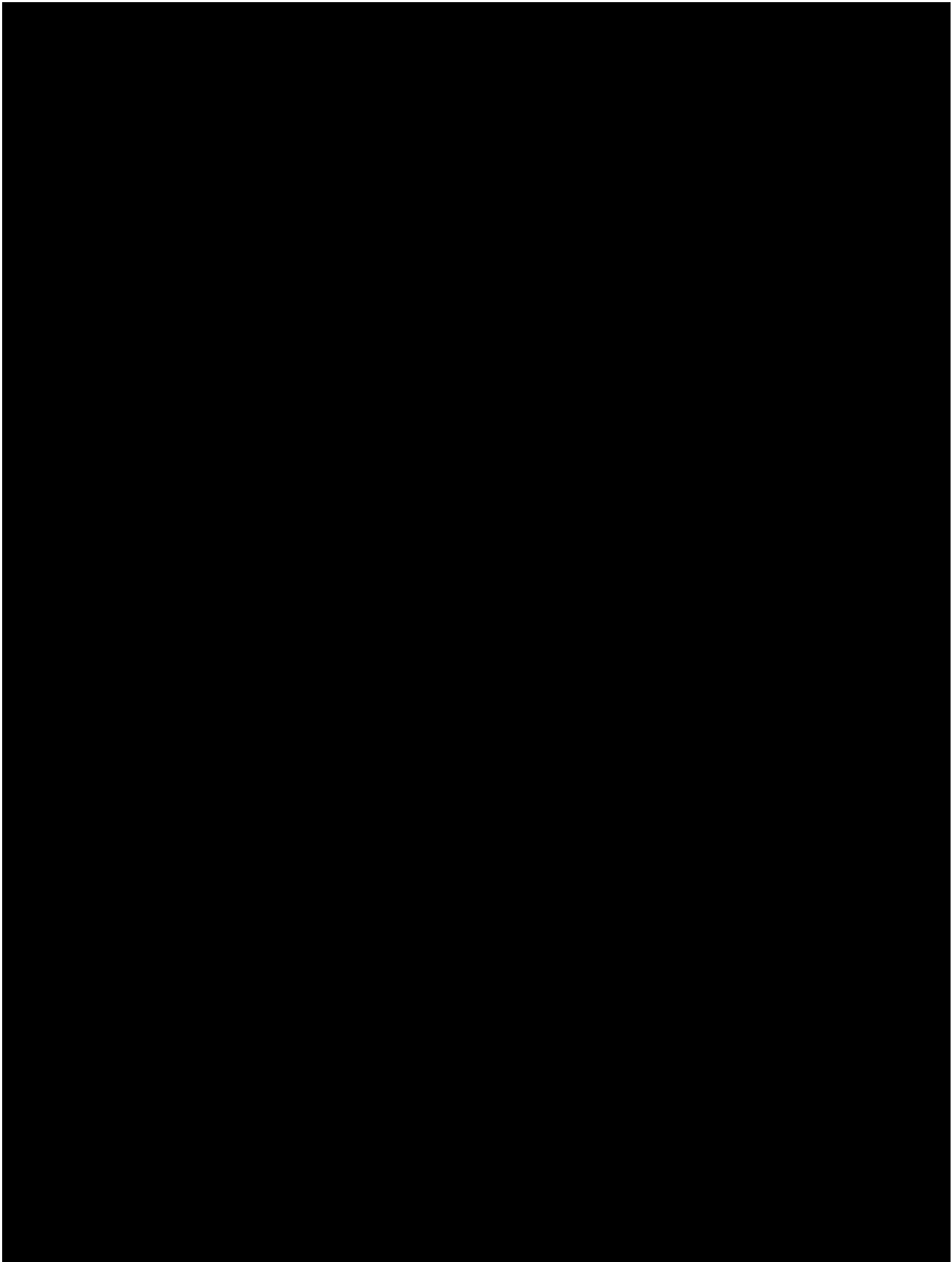
173 [REDACTED]

174 [REDACTED]

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HIGHLY CONFIDENTIAL – ATTORNEYS’ EYES ONLY – SOURCE CODE



HIGHLY CONFIDENTIAL – ATTORNEYS’ EYES ONLY – SOURCE CODE

220. [REDACTED]

221. Lastly, Arista’s copying of the help screen displays extends to the description of various command expressions (also known as “helpdesc”). For instance, in both Cisco’s CLI and Arista’s CLI, users can type “?” to generate context sensitive help, including a list of available commands and descriptions thereof. Arista has copied numerous examples of Cisco’s help descriptions that a user would see and these were also copied into Arista’s programs. An exemplary list of the help descriptions that are similar or identical as between Cisco and IOS are listed in Exhibit Copying-6. A summary of the help descriptions is provided below in my analysis of the evidence of Arista’s program copying, which is incorporated here by reference.

G. Cisco Programs Compared to the Arista Programs

222. I have personally reviewed and inspected both Arista’s EOS programs and Cisco’s IOS programs made available in this litigation. As part of that inspection, I have analyzed the structure and organization of the programs, as well as specific lines of code relating to the CLIs and parsers, among other relevant sections.

223. [REDACTED]

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Education

- Ph.D.** June 1997 *Georgia Institute of Technology* Computer Science
Dissertation Title: Networking and System Support for the Efficient, Scalable Delivery of Services in Interactive Multimedia Systems
Minor: Telecommunications Public Policy
- M.S.** June 1994 *Georgia Institute of Technology* Computer Science
Specialization: Networking and Systems
- B.S.** June 1992 *Georgia Institute of Technology* Information and Computer Science
(high honors) *Minors:* Economics, Technical Communication, American Literature

Employment History

Professor	Department of Computer Science University of California Santa Barbara, CA	Jul 2005 -- present
Associate Dean	College of Engineering University of California Santa Barbara, CA	Mar 2007 -- Aug 2009
Vice Chair	Department of Computer Science University of California Santa Barbara, CA	Jul 2000 -- Nov 2005
Associate Professor	Department of Computer Science University of California Santa Barbara, CA	Jul 2001 -- Jun 2005
Assistant Professor	Department of Computer Science University of California Santa Barbara, CA	Jul 1997 -- Jun 2001

Graduate Researcher	Broadband Telecommunications Center Georgia Center for Adv Telecom Tech Atlanta, GA	Sep 1996--Jun 1997
Graduate Intern	IBM T.J. Watson Research Labs Hawthorne, NY	Jun 1995--Sep 1995
Support Specialist	Office of Information Technology Georgia Institute of Technology Atlanta, GA	Sep 1995--Jun 1997
Research Assistant	College of Computing Georgia Institute of Technology Atlanta, GA	Jan 1994--Mar 1994
Graduate Intern	Hitachi Telecommunications Norcross, GA	Jun 1992--Sep 1992

Industry Technical Advising

Board of Directors	<u>The New Media Studio</u> Santa Barbara, CA	Nov 2006 -- present
Co-Founder & Chairman of the Board	Santa Barbara Labs, LLC Santa Barbara, CA	Sep 2007 -- Dec 2009
Board of Advisors	Techknowledge Point Santa Barbara, CA	May 2001 -- Dec 2007
Technical Advisory Board	Occam Networks, Inc. Santa Barbara, CA	May 2000 -- Dec 2010
Board of Advisors	Airplay Inc. San Francisco, CA	Jun 2005 -- Aug 2009
Consultant	Lockheed Martin Corporation San Jose, CA	Nov 1999 -- Jun 2009
Board of Advisors	Santa Barbara Technology Group Santa Barbara, CA	Sep 2000 -- Dec 2004
Board of Directors	Virtual Bandwidth, Inc. Santa Barbara, CA	Nov 2000 -- Jun 2001
Board of Advisors & Affiliated Scientist	Digital Fountain San Francisco, CA	Jan 2000 -- Dec 2001
Senior Technologist	IP Multicast Initiative, Stardust Forums Campbell, CA	Jun 1998 -- Dec 2000

I. Teaching

A. Courses Taught

CS 176A	Intro to Computer Communication Networks	Fall 1997, Fall 1998, Fall 2002, Fall 2003, Fall 2004, Spring 2005, Spring 2006, Spring 2007, Spring 2008, Fall 2008, Fall 2009, Fall 2010, Fall 2011, Fall 2012, Fall 2013, Fall 2014
CS 176B	Network Computing	Winter 2000, Winter 2001, Winter 2002, Winter 2012, Winter 2014, Winter 2015
MAT 201B	Media Networks and Services	Fall 1999, Fall 2000, Fall 2001, Fall 2003
CS 276	Distributed Computing and Computer Networks	Winter 1999, Spring 2000, Fall 2002, Fall 2005
CS 290I	Networking for Multimedia Systems	Winter 1998, Spring 1999, Fall 2004, Winter 2010
CS 595N	Technology and Society	Winter 2005, Fall 2005, Spring 2006, Fall 2006, Spring 2007, Fall 2007, Spring 2008, Fall 2008, Spring 2009
CS 595N	Economic Systems Seminar	Winter 2004, Spring 2004, Winter 2005, Spring 2005
CS 595N	Networking Seminar	Winter 1999, Fall 1999, Winter 2003
CS 595N	Wireless Networking & Multimedia Seminar	Fall 2000
CS 595I	Systems Design and Implementation Seminar	Fall 1999, Fall 2000, Winter 2001, Spring 2001, Winter 2002, Spring 2002

B. Other Teaching Experience

- *The Evolution of Advanced Networking Services: From the ARPAnet to Internet2*, Instructor, Summer 2001. Short course taught at Escuela de Ciencias Informatica (ECI) sponsored by the Universidad de Buenos Aires.
- *Johns Hopkins Center for Talented Youth*, Instructor, Summer 1994. CTY is a program to teach gifted high school students the fundamentals of computer science.
- *Georgia Institute of Technology*, Graduate Teaching Assistant, Sep 1994--Sep 1996. Worked as a TA for 12 quarters teaching 7 different courses (4 undergraduate and 3 graduate).

C. Ph.D. Students Advised [14 graduated]

14. Daniel Havey
Research Area: *Throughput and Delay on the Packet Switched Internet*
Date Graduated: Winter 2015
First Position: Microsoft
13. Lara Deek (co-advised with E. Belding)
Research Area: *Resource-Efficient Wireless Systems for Emerging Wireless Networks*
Date Graduated: Summer 2014
First Position: Post Doc, UIUC
12. Mike Wittie

- Research Area: *Towards Sustained Scalability of Communication Networks*
Date Graduated: Summer 2011
First Position: Assistant Professor, Montana State University
11. Allan Knight
Research Area: *Supporting Integration of Educational Technologies and Research of Their Effects on Learning*
Date Graduated: Summer 2009
First Position: Research Scientist, Citrix Online
 10. Hangjin Zhang
Research Area: *Towards Blended Learning: Educational Technology to Improve and Assess Teaching and Learning*
Date Graduated: Spring 2009
First Position: Microsoft
 9. Gayatri Swamynathan
Dissertation Title: *Towards Reliable Reputations for Distributed Applications*
Date Graduated: Spring 2008
First Position: Zynga
 8. Amit Jardosh (co-advised with E. Belding)
Dissertation Title: *Adaptive Large-Scale Wireless Networks: Measurements, Protocol Designs, and Simulation Studies*
Date Graduated: Fall 2007
First Position: Yahoo!
 7. Khaled Harras
Dissertation Title: *Protocol and Architectural Challenges in Delay and Disruption Tolerant Networks*
Date Graduated: Summer 2007
First Position: Assistant Professor, Carnegie Mellon University
 6. Krishna Ramachandran (co-advised with E. Belding)
Dissertation Title: *Design, Deployment, and Management of High-Capacity Wireless Mesh Networks*
Date Graduated: Winter 2006
First Position: Research Scientist, Citrix Online
 5. Robert Chalmers
Dissertation Title: *Improving Device Mobility with Intelligence at the Network Edge*
Date Graduated: Summer 2004
First Position: President and CEO, Limbo.net
 4. Prashant Rajvaidya
Dissertation Title: *Achieving Robust and Secure Deployment of Multicast*
Date Graduated: Spring 2004
First Position: President and CTO, Mosaic Networking
 3. Sami Rollins
Dissertation Title: *Overcoming Resource Constraints to Enable Content Exchange Applications in Next-Generation Environments*
Date Graduated: Spring 2003
First Position: Assistant Professor, Mount Holyoke College
 2. Srinivasan Jagannathan
Dissertation Title: *Multicast Tree-Based Congestion Control and Topology Management*
Date Graduated: Spring 2003
First Position: Consultant, Kelly & Associates
 1. Kamil Sarac
Dissertation Title: *Supporting a Robust Multicast Service in the Global Infrastructure*
Date Graduated: Spring 2002
First Position: Assistant Professor, UT-Dallas

D. M.S. Students Advised (Thesis/Project Option) [19 graduated and 1 current]

20. Greg Parsons
Research Area: *Drone-Based Mesh Networks*
Date Started: Fall 2014
19. Neer Shey
Research Area: *Analyzing Content Distribution Through Opportunistic Contact for Smart Cellular Phones*
Date Graduated: Spring 2010
18. Camilla Fiorese
Research Area: *Analysis of a Pure Rate-Based Congestion Control Algorithm*
Date Graduated: Summer 2009
17. Brian Weiner
Research Area: *Multi-Socket TCP: A Simple Approach to Improve Performance of Real-Time Applications over TCP*
Date Graduated: Fall 2007
16. Avijit Sen Mazumder
Research Area: *Facilitating Robust Multicast Group Management*
Date Graduated: Fall 2005
15. Rishi Matthew
Thesis Title: *Providing Seamless Access to Multimedia Content on Heterogeneous Platforms*
Date Graduated: Summer 2004
14. Camden Ho
Research Area: *Tools and Techniques for Wireless Network Management*
Date Graduated: Spring 2004
13. Amit Jardosh (co-advised with E. Belding)
Research Area: *Realistic Environment Models for Mobile Network Evaluation*
Date Graduated: Spring 2004
12. Nitin Solanki
Research Area: *SongWand: A Wireless Barcode Scanner Using Bluetooth Technology*
Date Graduated: Winter 2004
11. Vrishali Wagle (co-advised with E. Belding)
Research Area: *An Ontology-Based Service Discovery Mechanism*
Date Graduated: Winter 2004
10. Uday Mohan
Thesis Title: *Scalable Service Discovery in Mobile Ad hoc Networks*
Date Graduated: Spring 2003
9. Krishna Ramachandran
Thesis Title: *Ubiquitous Multicast*
Date Graduated: Spring 2003
8. John Slonaker
Thesis Title: *Inductive Loop Signature Acquisition Techniques*
Date Graduated: Spring 2002
7. Mohammad Battah
Thesis Title: *Dedicated Short-Range Communications Intelligent Transportation Systems Protocol (DSRC-ITS)*
Date Graduated: Spring 2002
6. Kevin Vogel
Thesis Title: *Integrating E-Commerce Applications into Existing Business Infrastructures*
Date Graduated: Spring 2001
5. Sami Rollins
Thesis Title: *Audio Xml: Aural Interaction with XML Documents*
Date Graduated: Winter 2000
4. Andy Davis

Thesis Title: *Stream Scheduling for Data Servers in a Scalable Interactive TV System*

Date Graduated: Spring 1999

3. David Makofske

Thesis Title: *MHealth: A Real-Time Graphical Multicast Monitoring Tool*

Date Graduated: Winter 1999

2. Prashant Rajvaidya

Thesis Title: *MANTRA: Router-Based Monitoring and Analysis of Multicast Traffic*

Date Graduated: Winter 1999

1. Alex DeCastro (co-advised with Yuan-Fang Wang)

Thesis Title: *Web-Based Collaborative 3D Modeling*

Date Graduated: Winter 1998

E. Teaching Awards

2006-2007 UCSB Academic Senate Distinguished Teaching Award

2004-2005 Computer Science Outstanding Faculty Member

2000-2001 UCSB Spotlight on Excellence Award

1999-2000 Computer Science Outstanding Faculty Member (co-recipient)

1998-1999 Computer Science Outstanding Faculty Member (co-recipient)

1997-1998 Computer Science Outstanding Faculty Member

II. Research

A. Journal Papers, Magazine Articles, Books, and Book Chapters

62. L. Deek, E. Garcia-Villegas, E. Belding, S.J. Lee, and K. Almeroth, "[A Practical Framework for 802.11 MIMO Rate Adaptation](#)," *Computer Networks*, vol. 83, num. 6, pp. 332-348, June 2015.
61. L. Deek, E. Garcia-Villegas, E. Belding, S.J. Lee, and K. Almeroth, "[Intelligent Channel Bonding in 802.11n WLANs](#)," *IEEE Transactions on Mobile Computing*, vol. 13, num. 6, pp. 1242-1255, June 2014.
60. H. Zhang and K. Almeroth, "[Alternatives for Monitoring and Limiting Network Access to Students in Network-Connected Classrooms](#)," *Journal of Interactive Learning Research (JILR)*, vol. 24, num. 3, pp. 237-265, July 2013.
59. M. Tavakolifard and K. Almeroth, "[A Taxonomy to Express Open Challenges in Trust and Reputation Systems](#)," *Journal of Communications*, vol. 7, num. 7, pp. 538-551, July 2012.
58. M. Tavakolifard and K. Almeroth, "[Social Computing: An Intersection of Recommender Systems, Trust/Reputation Systems, and Social Networks](#)," *IEEE Network*, vol. 26, num. 4, pp. 53-58, July/August 2012.
57. M. Tavakolifard, K. Almeroth, and P. Ozturk, "[Subjectivity Handling of Ratings for Trust and Reputation Systems: An Abductive Reasoning Approach](#)," *International Journal of Digital Content Technology and its Applications (JDCTA)*, vol. 5, num. 11, pp. 359-377, November 2011.
56. R. Raghavendra, P. Acharya, E. Belding and K. Almeroth, "[MeshMon: A Multi-Tiered Framework for Wireless Mesh Network Monitoring](#)," *Wireless Communications and Mobile Computing (WCMC) Journal*, vol. 11, num. 8, pp. 1182-1196, August 2011.

55. A. Knight and K. Almeroth, "[Automatic Plagiarism Detection with PAIRwise 2.0](#)," Journal of Interactive Learning Research (JILR), vol. 22, num. 3, pp. 379-400, July 2011.
54. V. Kone, M. Zheleva, M. Wittie, B. Zhao, E. Belding, H. Zheng, and K. Almeroth, "[AirLab: Consistency, Fidelity and Privacy in Wireless Measurements](#)," ACM Computer Communications Review, vol. 41, num. 1, pp. 60-65, January 2011.
53. G. Swamynathan, K. Almeroth, and B. Zhao, "[The Design of a Reliable Reputation System](#)," Electronic Commerce Research Journal, vol. 10, num. 3-4, pp. 239-270, December 2010.
52. P. Acharya, A. Sharma, E. Belding, K. Almeroth and K. Papagiannaki, "[Rate Adaptation in Congested Wireless Networks through Real-Time Measurements](#)," IEEE Transactions on Mobile Computing, vol. 9, num. 11, pp. 1535-1550, November 2010.
51. R. Raghavendra, E. Belding, K. Papagiannaki, and K. Almeroth, "[Unwanted Link Layer Traffic in Large IEEE 802.11 Wireless Networks](#)," IEEE Transactions on Mobile Computing, vol. 9, num. 9, pp. 1212-1225, September 2010.
50. H. Zhang and K. Almeroth, "[Moodog: Tracking Student Activity in Online Course Management Systems](#)," Journal of Interactive Learning Research (JILR), vol. 21, num. 3, pp. 407-429, July 2010.
49. R. Chertov and K. Almeroth, "[Qualitative Comparison of Link Shaping Techniques](#)," International Journal of Communication Networks and Distributed Systems, vol. 5, num. 1/2, pp. 109-129, July 2010.
48. A. Knight and K. Almeroth, "[Fast Caption Alignment for Automatic Indexing of Audio](#)," International Journal of Multimedia Data Engineering and Management, vol. 1, num. 2, pp. 1-17, April-June 2010.
47. K. Harras and K. Almeroth, "[Scheduling Messengers in Disconnected Clustered Mobile Networks](#)," Ad Hoc & Sensor Wireless Networks, vol. 9, num. 3-4, pp. 275-304, March-April 2010.
46. A. Jardosh, K. Papagiannaki, E. Belding, K. Almeroth, G. Iannaccone, and B. Vinnakota, "[Green WLANs: On-Demand WLAN Infrastructures](#)," ACM Journal on Mobile Networks and Applications (MONET), vol. 14, num. 6, pp. 798-814, December 2009.
45. M. Wittie, K. Harras, K. Almeroth, and E. Belding, "[On the Implications of Routing Metric Staleness in Delay Tolerant Networks](#)," Computer Communications Special Issue on Delay and Disruption Tolerant Networking, vol. 32, num. 16, pp. 1699-1709, October 2009.
44. K. Harras, L. Deek, C. Holman, and K. Almeroth, "[DBS-IC: An Adaptive Data Bundling System for Intermittent Connectivity](#)," Computer Communications Special Issue on Delay and Disruption Tolerant Networking, vol. 32, num. 16, pp. 1687-1698, October 2009.
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10. R. Chalmers and K. Almeroth, "[Developing a Multicast Metric](#)," *Global Internet*, San Francisco, California, USA, December 2000.
9. K. Sarac and K. Almeroth, "[Monitoring Reachability in the Global Multicast Infrastructure](#)," *IEEE International Conference on Network Protocols (ICNP)*, Osaka, JAPAN, November 2000.
8. K. Almeroth, "[A Long-Term Analysis of Growth and Usage Patterns in the Multicast Backbone \(MBone\)](#)," *IEEE INFOCOM*, Tel Aviv, ISRAEL, March 2000.
7. K. Almeroth, K. Obraczka and D. De Lucia, "[A Lightweight Protocol for Interconnecting Heterogeneous Devices in Dynamic Environments](#)," *IEEE International Conference on Multimedia Computing and Systems (ICMCS)*, Florence, ITALY, June 1999.
6. K. Almeroth and M. Ammar, "[The Interactive Multimedia Jukebox \(IMJ\): A New Paradigm for the On-Demand Delivery of Audio/Video](#)," **Best Paper** at the *Seventh International World Wide Web Conference (WWW)*, Brisbane, AUSTRALIA, April 1998.
5. K. Almeroth, M. Ammar and Z. Fei, "[Scalable Delivery of Web Pages Using Cyclic Best-Effort \(UDP\) Multicast](#)," *IEEE INFOCOM*, San Francisco, California, USA, June 1998.
4. K. Almeroth and M. Ammar, "[Delivering Popular Web Pages Using Cyclic Unreliable Multicast \(Extended Abstract\)](#)," *SPIE Conference on Voice, Video and Data Communications*, Dallas, Texas, USA, November 1997.
3. K. Almeroth, A. Dan, D. Sitaram and W. Tetzlaff, "[Long Term Resource Allocation in Video Delivery Systems](#)," *IEEE INFOCOM*, Kobe, JAPAN, April 1997.
2. K. Almeroth and M. Ammar, "[On the Performance of a Multicast Delivery Video-On-Demand Service with Discontinuous VCR Actions](#)," *International Conference on Communications (ICC)*, Seattle, Washington, USA, June 1995.
1. K. Almeroth and M. Ammar, "[A Scalable, Interactive Video-On-Demand Service Using Multicast Communication](#)," *International Conference on Computer Communication and Networks (IC3N)*, San Francisco, California, USA, September 1994.

C. Workshop Papers (refereed)

34. M. Tavakolifard, J. Gulla, K. Almeroth, F. Hopfgartner, B. Kille, T. Plumbaum, A. Lommatzsch, T. Brodt, A.

Bucko, and T. Heintz, "[Workshop and Challenge on News Recommender Systems](#)," *ACM RecSys News Recommender Systems (NRS) Workshop and Challenge*, Hong Kong, CHINA, October 2013.

33. M. Tavakolifard, K. Almeroth, and J. Gulla, "[Does Social Contact Matter? Modelling the Hidden Web of Trust Underlying Twitter](#)," *ACM International Workshop on Social Recommender Systems (SRS)*, Rio de Janeiro, BRAZIL, May 2013.
32. D. Johnson, E. Belding, K. Almeroth and G. van Stam, "[Internet Usage and Performance Analysis of a Rural Wireless Network in Macha, Zambia](#)," *ACM Networked Systems for Developing Regions (NSDR) Workshop*, San Francisco, California, USA, June 2010.
31. D. Havey, R. Chertov, and K. Almeroth, "[Wired Wireless Broadcast Emulation](#)," *International Workshop on Wireless Network Measurement (WiNMe)*, Seoul, Korea, June 2009.
30. R. Raghavendra, P. Acharya, E. Belding, and K. Almeroth, "[MeshMon: A Multi-Tiered Framework for Wireless Mesh Network Monitoring](#)," *ACM Mobihoc Wireless of the Students, by the Students, for the Students Workshop (S3)*, New Orleans, Louisiana, USA, May 2009.
29. G. Swamynathan, C. Wilson, B. Boe, B. Zhao, and K. Almeroth, "[Do Social Networks Improve e-Commerce: A Study on Social Marketplaces](#)," *ACM Sigcomm Workshop on Online Social Networks (WOSN)*, Seattle, Washington, USA, August 2008.
28. R. Raghavendra, E. Belding, and K. Almeroth, "[Antler: A Multi-Tiered Approach to Automated Wireless Network Management](#)," *IEEE Workshop on Automated Network Management (ANM)*, Phoenix, Arizona, USA, April 2008.
27. S. Karpinski, E. Belding, and K. Almeroth, "[Towards Realistic Models of Wireless Workload](#)," *International Workshop on Wireless Network Measurement (WiNMe)*, Limassol, CYPRUS, April 2007.
26. K. Harras, M. Wittie, K. Almeroth, and E. Belding, "[ParaNets: A Parallel Network Architecture for Challenged Networks](#)," *IEEE Workshop on Mobile Computing Systems and Applications (HotMobile)*, Tucson, Arizona, USA, February 2007.
25. H. Caituiro-Monge, K. Almeroth, M. del Mar Alvarez-Rohena, "[Friend Relay: A Resource Sharing Framework for Mobile Wireless Devices](#)," *ACM International Workshop on Wireless Mobile Applications and Services on WLAN Hotspots (WMASH)*, Los Angeles, California, September 2006.
24. G. Swamynathan, Ben Y. Zhao and K. Almeroth, "[Exploring the Feasibility of Proactive Reputations](#)," *International Workshop on Peer-to-Peer Systems (IPTPS)*, Santa Barbara, California, USA, February 2006.
23. G. Swamynathan, Ben Y. Zhao and K. Almeroth, "[Decoupling Service and Feedback Trust in a Peer-to-Peer Reputation System](#)," *International Workshop on Applications and Economics of Peer-to-Peer Systems (AEPP)*, Nanjing, CHINA, November 2005.
22. K. Ramachandran, M. Buddhikot, G. Chandranmenon, S. Miller, E. Belding, and K. Almeroth, "[On the Design and Implementation of Infrastructure Mesh Networks](#)," *IEEE Workshop on Wireless Mesh Networks (WiMesh)*, Santa Clara, California, USA, September 2005.
21. A. Jardosh, K. Ramachandran, K. Almeroth and E. Belding, "[Understanding Link-Layer Behavior in Highly Congested IEEE 802.11b Wireless Networks](#)," *Sigcomm Workshop on Experimental Approaches to Wireless Network Design and Analysis (EWIND)*, Philadelphia, Pennsylvania, USA, August 2005.
20. A. Sen Mazumder, K. Almeroth and K. Sarac, "[Facilitating Robust Multicast Group Management](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Skamania, Washington, USA, June 2005.
19. Y. Sun, I. Sheriff, E. Belding and K. Almeroth, "[An Experimental Study of Multimedia Traffic Performance in Mesh Networks](#)," *MobiSys International Workshop on Wireless Traffic Measurements and Modeling (WitMeMo)*,

Seattle, Washington, USA, June 2005.

18. K. Ramachandran, K. Almeroth and E. Belding, "[A Framework for the Management of Large-Scale Wireless Network Testbeds](#)," International Workshop on Wireless Network Measurement (WinMee), Trentino, ITALY, April 2005.
17. A. Garyfalos, K. Almeroth and K. Sanzgiri, "[Deployment Complexity Versus Performance Efficiency in Mobile Multicast](#)," *International Workshop on Broadband Wireless Multimedia: Algorithms, Architectures and Applications (BroadWiM)*, San Jose, California, USA, October 2004.
16. C. Ho, K. Ramachandran, K. Almeroth and E. Belding, "[A Scalable Framework for Wireless Network Monitoring](#)," *ACM International Workshop on Wireless Mobile Applications and Services on WLAN Hotspots (WMASH)*, Philadelphia, Pennsylvania, USA, October 2004.
15. A. Garyfalos, K. Almeroth and J. Finney, "[A Hybrid of Network and Application Layer Multicast for Mobile IPv6 Networks](#)," *International Workshop on Large-Scale Group Communication (LSGC)*, Florence, ITALY, October 2003.
14. A. Garyfalos, K. Almeroth and J. Finney, "[A Comparison of Network and Application Layer Multicast for Mobile IPv6 Networks](#)," *ACM Workshop on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM)*, San Diego, California, USA, September 2003.
13. S. Jagannathan, and K. Almeroth, "[Pricing and Resource Provisioning for Delivering E-Content On-Demand with Multiple Levels-of-Service](#)," *International Workshop on Internet Charging and QoS Technologies (ICQT)*, Zurich, SWITZERLAND, October 2002.
12. S. Rollins, K. Almeroth, D. Milojevic, and K. Nagaraja, "[Power-Aware Data Management for Small Devices](#)," *Workshop on Wireless Mobile Multimedia (WoWMoM)*, Atlanta, GA, USA, September 2002.
11. K. Almeroth, S. Bhattacharyya, and C. Diot, "[Challenges of Integrating ASM and SSM IP Multicast Protocol Architectures](#)," *International Workshop on Digital Communications: Evolutionary Trends of the Internet (IWDC)*, Taormina, ITALY, September 2001.
10. K. Sarac and K. Almeroth, "[Scalable Techniques for Discovering Multicast Tree Topology](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Port Jefferson, New York, USA, June 2001.
9. P. Rajvaidya, K. Almeroth and K. Claffy, "[A Scalable Architecture for Monitoring and Visualizing Multicast Statistics](#)," *IFIP/IEEE International Workshop on Distributed Systems: Operations & Management (DSOM)*, Austin, Texas, USA, December 2000.
8. S. Jagannathan, K. Almeroth and A. Acharya, "[Topology Sensitive Congestion Control for Real-Time Multicast](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Chapel Hill, North Carolina, USA, June 2000.
7. K. Sarac and K. Almeroth, "[Supporting the Need for Inter-Domain Multicast Reachability](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Chapel Hill, North Carolina, USA, June 2000.
6. D. Makofske and K. Almeroth, "[MHealth: A Real-Time Multicast Tree Visualization and Monitoring Tool](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Basking Ridge New Jersey, USA, June 1999.
5. K. Almeroth and Y. Zhang, "[Using Satellite Links as Delivery Paths in the Multicast Backbone \(MBone\)](#)," *ACM/IEEE International Workshop on Satellite-Based Information Services (WOSBIS)*, Dallas, Texas, USA, October 1998.
4. M. Ammar, K. Almeroth, R. Clark and Z. Fei, "[Multicast Delivery of Web Pages OR How to Make Web Servers](#)

[Pushy](#)," *Workshop on Internet Server Performance (WISP)*, Madison, Wisconsin, USA, June 1998.

3. K. Almeroth and M. Ammar, "[Prototyping the Interactive Multimedia Jukebox](#)," *Mini-conference on Multimedia Appliances, Interfaces, and Trials--International Conference on Communications (ICC)*, Montreal, Quebec, CANADA, June 1997.
2. K. Almeroth and M. Ammar, "[Collection and Modeling of the Join/Leave Behavior of Multicast Group Members in the MBone](#)," *High Performance Distributed Computing Focus Workshop (HPDC)*, Syracuse, New York, USA, August 1996.
1. K. Almeroth and M. Ammar, "[The Role of Multicast Communication in the Provision of Scalable and Interactive Video-On-Demand Service](#)," *Network and Operating System Support for Digital Audio and Video (NOSSDAV)*, Durham, New Hampshire, USA, April 1995.

D. Non-Refereed Publications

8. K. Almeroth, E. Belding, M. Buddhikot, G. Chandranmenon, S. Miller, and K. Ramachandran, "[Infrastructure Mesh Networks](#)," *U.S. Patent Application US20070070959 A1*, September 2005.
7. K. Almeroth, R. Caceres, A. Clark, R. Cole, N. Duffield, T. Friedman, K. Hedayat, K. Sarac, M. Westerlund, "[RTP Control Protocol Extended Reports \(RTCP XR\)](#)," *Internet Engineering Task Force (IETF) Request for Comments (RFC) 3611*, November 2003.
6. Z. Albanna, K. Almeroth, D. Meyer, and M. Schipper, "[IANA Guidelines for IPv4 Multicast Address Allocation](#)," *Internet Engineering Task Force (IETF) Request for Comments (RFC) 3171*, August 2001.
5. B. Quinn and K. Almeroth, "[IP Multicast Applications: Challenges and Solutions](#)," *Internet Engineering Task Force (IETF), Request for Comments (RFC) 3170*, September 2001.
4. K. Almeroth, L. Wei and D. Farinacci, "[Multicast Reachability Monitor \(MRM\) Protocol](#)," *Internet Engineering Task Force Internet Draft*, July 2000.
3. K. Almeroth and L. Wei, "[Justification for and use of the Multicast Reachability Monitor \(MRM\) Protocol](#)," *Internet Engineering Task Force Internet Draft*, March 1999.
2. K. Almeroth, "[Managing IP Multicast Traffic: A First Look at the Issues, Tools, and Challenges](#)," IP Multicast Initiative White Paper, San Jose, California, USA, February 1999.
1. K. Almeroth, K. Obraczka and D. De Lucia, "[Pseudo-IP: Providing a Thin Network Protocol for Semi-Intelligent Wireless Devices](#)," *DARPA/NIST Smart Spaces Workshop*, Gaithersburg, Maryland, USA, July 1998.

E. Released Software Systems

19. *A Multi-radio Wireless Mesh Network Architecture* -- <http://moment.cs.ucsb.edu/tic/>. Released December 1, 2006 (with K. Ramachandran, I. Sheriff, and E. Belding). The software as part of a multi-radio wireless mesh network that includes a Split Wireless Router that alleviates the interference that can occur between commodity radios within a single piece of hardware. The second is server software to perform channel assignment and communicate the assignments throughout the mesh network.
18. *AODV-Spanning Tree (AODV-ST)* -- <http://www.cs.ucsb.edu/~krishna/aodv-st/>. Released September 1, 2006 (with K. Ramachandran and E. Belding). AODV-ST is an extension of the well-known AODV protocol specifically

designed for wireless mesh networks. The advantages of AODV-ST over AODV include support for high throughput routing metrics, automatic route maintenance for common-case traffic, and low route discovery latency.

17. ***The Multicast Detective*** -- http://www.nmsl.cs.ucsb.edu/mcast_detective/. Released September 1, 2005 (with A. Sen Mazumder). The multicast detective is a robust solution to determine the existence and nature of multicast service for a particular user. By performing a series of tests, a user can determine whether there is network support for multicast, and consequently, whether a multicast group join is likely to succeed.
16. ***AutoCap: Automatic and Accurate Captioning*** -- <http://www.nmsl.cs.ucsb.edu/autocap/>. Released August 1, 2005 (with A. Knight). AutoCap is a software system that takes as input an audio/video file and a text transcript. AutoCap creates captions by aligning the utterances in the audio/video file to the transcript. For those words that are not recognized, AutoCap estimates when the words were spoken along with an error bound that gives the content creator an idea of caption accuracy. The result is a collection of accurately time-stamped captions that can be displayed with the video.
15. ***PAIRwise Plagiarism Detection System*** -- <http://cits.ucsb.edu/pair/>. Released July 1, 2005 (with A. Knight). PAIRwise is a plagiarism detection system with: (1) an easy-to-use interface for submitting papers, (2) a flexible comparison engine that allows intra-class, inter-class, and Internet-based comparisons, and (3) an intuitive graphical presentation of results.
14. ***DAMON Multi-Hop Wireless Network Monitoring*** -- <http://moment.cs.ucsb.edu/damon/>. Released October 1, 2004 (with K. Ramachandran and E. Belding). DAMON is a distributed system for monitoring multi-hop mobile networks. DAMON uses agents within the network to monitor network behavior and send collected measurements to data repositories. DAMON's generic architecture supports the monitoring of a wide range of protocol, device, or network parameters.
13. ***Multicast Firewall*** -- <http://www.nmsl.cs.ucsb.edu/mafia/>. Released June 1, 2004 (with K. Ramachandran). MAFIA, a multicast firewall and traffic management solution, has the specific aim of strengthening multicast security through multicast access control, multicast traffic filtering, and DoS attack prevention.
12. ***AODV@IETF Peer Routing Software*** -- <http://moment.cs.ucsb.edu/aodv-ietf/>. Released November 1, 2003 (with K. Ramachandran and E. Belding). One of the first large-scale efforts to run the Ad hoc On demand Distance Vector (AODV) routing protocol in a public space (at the Internet Engineering Task Force (IETF)). The implementation includes a daemon that runs on both the Linux and Windows operating systems.
11. ***Mobility Obstacles*** -- <http://moment.cs.ucsb.edu/mobility/>. Released September 1, 2003 (with A. Jardosh, E. Belding, and S. Suri). The topology and movement of nodes in ad hoc protocol simulation are key factors in protocol performance. In this project, we have developed ns-2 simulation plug-ins that create more realistic movement models through the incorporation of obstacles. These obstacles are utilized to restrict both node movement and wireless transmissions.
10. ***mwalk*** -- <http://www.nmsl.cs.ucsb.edu/mwalk/>. Released December 1, 2000 (with R. Chalmers). Mwalk is a collection of Java applications and Perl scripts which re-create a global view of a multicast session from mtrace and RTCP logs. Users to the site can download mwalk, examine the results of our analysis, or download data sets for use in simulations dependent on multicast tree characteristics.
9. ***MANTRA2*** -- <http://www.nmsl.cs.ucsb.edu/mantra/>. Released December 1, 1999 (with P. Rajvaidya). This new version of MANTRA focuses on the visualization of inter-domain routing statistics. Working in conjunction with the Cooperative Association for Internet Data Analysis (CAIDA) we have developed advanced collection and visualization techniques.
8. ***MRM*** -- <http://www.nmsl.cs.ucsb.edu/mrm/>. Released October 1, 1999 (with K. Sarac). MRM is the Multicast Reachability Protocol. We have implemented an end-host agent that responds to MRM Manager commands. Our end-host agent works in conjunction with Cisco routers to detect and isolate multicast faults.

7. **MANTRA** -- <http://www.nmsl.cs.ucsb.edu/mantra/>. Released January 1, 1999 (with P. Rajvaidya). MANTRA is the Monitoring and Analysis of Traffic in Multicast Routers. It uses scripts to collect and display data from backbone multicast routers.
6. **SDR Monitor** -- <http://www.nmsl.cs.ucsb.edu/sdr-monitor/>. Released January 1, 1999 (with K. Sarac). The SDR Monitor receives e-mail updates from participants containing information about observed sessions in the MBone. A global view of multicast reachability is then constructed.
5. **The MHealth tool** -- <http://www.nmsl.cs.ucsb.edu/mhealth/>. Released September 1, 1998 (with D. Makofske). The mhealth tool graphically visualizes MBone multicast group trees and provides 'health' information including end-to-end losses per receiver and losses on a per hop basis. The implementation required expertise in Java, the MBone tools, and Unix.
4. **The MControl tool** -- <http://www.nmsl.cs.ucsb.edu/mcontrol/>. Released August 1, 1998 (with D. Makofske). Mcontrol is a tool to provide VCR-based interactivity for live MBone sessions. The implementation required expertise in Java, the MBone tools, and Unix.
3. **Interactive Multimedia Jukebox (IMJ)** -- <http://imj.ucsb.edu/>. Released October 1, 1996. The IMJ combines the WWW and the MBone conferencing tools to provide a multi-channel video jukebox offering both instructional and entertainment programming on a wide scale. The implementation required expertise in HTML, Perl, C, the MBone tools, and Unix.
2. **Mlisten** -- <http://www.cc.gatech.edu/computing/Telecomm/mbone/>. Released September 1, 1995. A tool to continuously collect MBone multicast group membership information including number and location of members, membership duration, and inter-arrival time for all audio and video sessions. The implementation required expertise in C, Tcl/Tk, the MBone tools, and UNIX socket programming.
1. **Audio-on-Demand (AoD)**. March 1, 1995. A server/client prototype to demonstrate interactivity in near VoD systems. The AoD server provides songs-on-demand and VCR-like functions via multicast IP over Ethernet. The implementation required expertise in C, OpenWindows programming, UNIX socket programming, and network programming.

F. Tutorials, Panels and Invited Talks

- "25th Anniversary Panel," Network and Operating System Support for Digital Audio and Video (NOSSDAV), Portland, Oregon, USA, March 2015.
- "Sensing and Opportunistic Delivery of Ubiquitous Video in Health Monitoring, On-Campus and Social Network Applications," Workshop on Mobile Video Delivery (MoViD), Chapel Hill North Carolina, USA, February 2012.
- "Medium Access in New Contexts: Reinventing the Wheel?," USC Invited Workshop on Theory and Practice in Wireless Networks, Los Angeles, California, USA, May 2008.
- "The Wild, Wild West: Wireless Networks Need a New Sheriff," University of Florida CISE Department Lecture Series, Gainesville, Florida, USA, February 2008.
- "Distinguishing Between Connectivity, Intermittent Connectivity, and Intermittent Disconnectivity," Keynote at the ACM MobiCom Workshop on Challenged Networks (CHANTS), Montreal, CANADA, September 2007.
- "The Three Ghosts of Multicast: Past, Present, and Future," Keynote at the Trans-European Research and Education Networking Association (TERENA) Networking Conference, Lynby, DENMARK, May 2007.
- "Multicast Help Wanted: From Where and How Much?," Keynote at the Workshop on Peer-to-Peer Multicasting

(P2PM), Las Vegas, Nevada, USA, January 2007.

- "The Confluence of Wi-Fi and Apps: What to Expect Next," Engineering Insights, UC-Santa Barbara, Santa Barbara, California, USA, October 2006.
- "Challenges, Opportunities, and Implications for the Future Internet," University of Minnesota Digital Technology Center, Minneapolis, Minnesota, USA, September 2006.
- "Wireless Technology as a Catalyst: Possibilities for Next-Generation Interaction," Santa Barbara Forum on Digital Transitions, Santa Barbara, California, USA, April 2006.
- "Challenges and Opportunities in an Internet with Pervasive Wireless Access," University of Texas--Dallas Computer Science Colloquium, Dallas, Texas, USA, March 2006.
- "Challenges and Opportunities with Pervasive Wireless in the Internet," Duke University Computer Science Colloquium, Durham, North Carolina, USA, February 2006.
- "The Span From Wireless Protocols to Social Applications," Intel Research Labs, Cambridge, United Kingdom, December 2005.
- "The Internet Dot.Com Bomb and Beyond the Dot.Com Calm," CSE IGERT and Cal Poly Lecture Series, San Luis Obispo, California, USA, October 2005.
- "Panel: Directions in Networking Research," IEEE Computer Communications Workshop (CCW), Irvine, California, USA, October 2005.
- "Economic Incentives for Ad Hoc Networks," KAIST New Applications Seminar, Seoul, South Korea, March 2004.
- "New Applications for the Next Generation Internet," Citrix Systems, Santa Barbara, California, USA, March 2004.
- "PI: The Imperfect Pursuit of Pure Pattern," CITS Visions in Technology Series, Santa Barbara, California, USA, January 2004.
- "Panel: Core Networking Issues and Protocols for the Internet," National Science Foundation (NSF) Division of Advanced Networking Infrastructure and Research (ANIR) Principal Investigators Workshop, Washington DC, USA, March 2003.
- "Panel: Pricing for Content in the Internet," SPIE ITCom Internet Performance and Control of Network Systems, Boston, Massachusetts, USA, July 2002.
- "The Technology Behind Wireless LANs," Central Coast MIT Enterprise Forum, Santa Barbara, California, USA, March 2002.
- "Lessons Learned in the Digital Classroom," Center for Information and Technology Brown Bag Symposium, Santa Barbara, California, USA, March 2002.
- "The Evolution of Advanced Networking Services: From the ARPAnet to Internet2," California State University--San Luis Obispo CS Centennial Colloquium Series, San Luis Obispo, California, USA, February 2002.
- "Deployment of IP Multicast in Campus Infrastructures," Internet2 Campus Deployment Workshop, Atlanta, Georgia, USA, May 2001.
- "Multicast: Is There Anything Else to Do?," Sprint Research Retreat, Miami, Florida, USA, May 2001.
- "The Evolution of Next-Generation Internet Services and Applications," Government Technology Conference 2001 (GTC) for the Western Region, Sacramento, California, USA, May 2001.

- "I2 Multicast: Not WIDE-scale Deployment, FULL-scale Deployment," Closing Plenary, Internet2 Member Meetings, Washington, D.C., USA, March 2001.
- "Panel: Beyond IP Multicast," Content Delivery Networks (CDN), New York, New York, USA, February 2001.
- "Viable Multicast Pricing & Business Models for Wider-Scale Deployment," Content Delivery Networks (CDN), New York, New York, USA, February 2001.
- "IP Multicast: Modern Protocols, Deployment, and Management," Content Delivery Networks (CDN), New York, New York, USA, February 2001 & San Jose, California, USA, December 2001.
- "Under the Hood of the Internet," Technology 101: Technology for Investors, Center for Entrepreneurship & Engineering Management, November 2000.
- "Understanding Multicast Traffic in the Internet," (1) University of Virginia, (2) University of Maryland, and (3) Columbia University, September 2000.
- "The Bad, The Ugly, and The Good: The Past, Present, and Future of Multicast," Digital Fountain, San Francisco, California, USA, August 2000.
- "Implications of Source-Specific Multicast (SSM) on the Future of Internet Content Delivery," Occam Networks, Santa Barbara, California, USA, August 2000.
- "Introduction to Multicast Routing Protocols," UC-Berkeley Open Mash Multicast Workshop, Berkeley, California, USA, July 2000.
- "Efforts to Understand Traffic and Tree Characteristics," University of Massachusetts--Amherst Colloquia, Amherst, Massachusetts, USA, May 2000.
- "Monitoring Multicast Traffic," Sprint Research Retreat, Half Moon Bay, California, USA, April 2000.
- "What is the Next Generation of Multicast in the Internet?," HRL Laboratories, Malibu, California, USA, January 2000.
- "Mission and Status of the Center for Information Technology and Society (CITS)," Intel Research Council, Portland, Oregon, USA, September 1999.
- "Multicast at a Crossroads," IP Multicast Initiative Summits and Bandwidth Management Workshops, San Francisco, CA, USA, (1) October 1999; (2) February 2000; and (3) June 2000.
- "IP Multicast: Modern Protocols, Deployment, and Management," Network+Interop: (1) Las Vegas, Nevada, USA--May 2000; (2) Tokyo, JAPAN--June 2000; (3) Atlanta, Georgia, USA--September 2000; (4) Las Vegas, Nevada, USA--May 2001; (5) Las Vegas, Nevada, USA--May 2002.
- "IP Multicast: Practice and Theory" (w/ Steve Deering), Network+Interop: (1) Las Vegas, Nevada, USA--May 1999; (2) Tokyo, JAPAN--June 1999; and (3) Atlanta, Georgia, USA--September 1999.
- "Internet2 Multicast Testbeds and Applications," Workshop on Protocols for High Speed Networks (PfHSN), Salem, Massachusetts, USA, August 1999.
- "IP Multicast: Protocols for the Intra- and Inter-Domain," Lucent Technologies, Westford, Massachusetts, USA, August 1999.
- "Internet2 Multicast Testbeds and Applications," NASA Workshop: Bridging the Gap, Moffett Field, California, USA, August 1999.
- "The Evolution of Next-Generation Services and Applications in the Internet," Tektronix Distinguished Lecture

Series, Portland, Oregon, USA, May 1999.

- "Multicast Applications and Infrastructure in the Next Generation Internet," CENIC 99 Workshop on Achieving Critical Mass for Advanced Applications, Monterey, California, USA, May 1999.
- "Multicast Traffic Monitoring and Analysis Work at UCSB" (w/ P. Rajvaidya), Workshop on Internet Statistics and Metrics Analysis (ISMA), San Diego, California, USA, April 1999.
- "How the Internet Works: Following Bits Around the World," Science Lite, Santa Barbara General Affiliates and Office of Community Relations, California, USA, February 1999.
- "Managing Multicast: Challenges, Tools, and the Future," IP Multicast Initiative Summit, San Jose, California, USA, February 1999.
- "The Future of Multicast Communication and Protocols," Internet Bandwidth Management Summit (iBAND), San Jose, California, USA, November 1998.
- "An Overview of IP Multicast: Applications and Deployment," (1) Workshop on Evaluating IP Multicast as the Solution for Webcasting Real-Time Networked Multimedia Applications, New York, New York, USA, July 1998; and (2) Satellites and the Internet Conference, Washington, D.C., USA, July 1998.
- "IETF Developments in IP Multicast," IP Multicast Initiative Summit, San Jose, California, USA, February 1998.
- "An Introduction to IP Multicast and the Multicast Backbone (MBone)" vBNS Technical Meeting sponsored by the National Center for Network Engineering (NLNRE), San Diego, California, USA, February 1998.
- "Using Multicast Communication to Deliver WWW Pages" Computer Communications Workshop (CCW '97), Phoenix, Arizona, USA, September 1997.

G. Research Funding

- K. Almeroth, "Packet Scheduling Using IP Embedded Transport Instrumentation," Cisco Systems Inc., \$100,000, 3/1/13-8/31/14.
- K. Almeroth, E. Belding and S.J. Lee, "GOALI: Maximizing Available Bandwidth in Next Generation WLANs", National Science Foundation (NSF), \$101,088, 10/1/13-9/30/14.
- K. Almeroth and E. Belding, "GOALI: Intelligent Channel Management in 802.11n Networks," National Science Foundation (NSF), \$51,000, 10/1/10-9/30/11.
- B. Zhao, K. Almeroth, H. Zheng, and E. Belding, "NeTS: Medium: Airlab: Distributed Infrastructure for Wireless Measurements," National Science Foundation (NSF), \$700,000, 9/1/09-8/13/13.
- K. Almeroth, E. Belding and T. Hollerer, "NeTS-WN: Wireless Network Health: Real-Time Diagnosis, Adaptation, and Management," National Science Foundation (NSF), \$600,000, 10/1/07-9/30/10.
- K. Almeroth, "Next-Generation Service Engineering in Internet2," University Consortium for Advanced Internet Development (UCAID), \$1,254,000, 7/1/04-6/30/09 (reviewed and renewed each year).
- B. Manjunath, K. Almeroth, F. Bullo, J. Hespanha, T. Hollerer, C. Krintz, U. Madhow, K. Rose, A. Singh, and M. Turk, "Large-Scale Multimodal Wireless Sensor Network," Office of Naval Research Defense University Research Instrumentation Program (DURIP), \$655,174, 4/14/08-4/14/09.
- K. Almeroth and E. Belding, "Improving Robustness in Evolving Wireless Infrastructures," Intel Corporation,

\$135,000, 7/1/06-6/30/09 (reviewed and renewed for second and third year).

- K. Almeroth and K. Sarac, "Bridging Support in Mixed Deployment Multicast Environments," Cisco Systems Inc., \$100,000, 9/1/07-8/31/08.
- K. Sarac and K. Almeroth, "Building the Final Piece in One-to-Many Content Distribution," Cisco Systems Inc., \$95,000, 9/1/06-8/31/07.
- E. Belding, K. Almeroth and J. Gibson, "Real-Time Communication Support in a Ubiquitous Next-Generation Internet," National Science Foundation (NSF), \$900,000, 10/1/04-9/30/07.
- K. Almeroth and K. Sarac, "Improving the Robustness of Multicast in the Internet," Cisco Systems Inc., \$80,000, 9/1/04-8/31/05.
- R. Mayer, B. Bimber, K. Almeroth and D. Chun, "Assessing the Pedagogical Implications of Technology in College Courses," Mellon Foundation, \$350,000, 7/1/04-6/30/07.
- B. Bimber, A. Flanagan and C. Stol, "Technological Change and Collective Association: Changing Relationships Among Technology, Organizations, Society and the Citizenry," National Science Foundation (NSF), \$329,175, 7/1/04-6/30/07.
- K. Almeroth and B. Bimber, "Plagiarism Detection Techniques and Software," UCSB Instructional Development, \$22,000, 7/1/04-6/30/05.
- K. Almeroth, "Student Travel Support for the 14th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV)," National Science Foundation (NSF), \$10,000, 5/1/04-8/31/04.
- K. Almeroth, "An Automated Indexing System for Remote, Archived Presentations," QAD Inc., \$25,000, 5/1/04-6/30/05.
- K. Almeroth and M. Turk, "A Remote Teaching Assistant Support System," Microsoft, \$40,000, 1/1/04-6/30/05.
- K. Almeroth, "Supporting Multicast Service Functionality in Helix," Real Networks, \$30,000, 9/1/03-6/30/04.
- K. Almeroth and E. Belding, "Service Discovery in Mobile Networks," Nokia Summer Research Grant (U. Mohan), \$10,240, 7/1/03-9/30/03.
- K. Almeroth, D. Zappala, "Building a Global Multicast Service," Cisco Systems Inc., \$100,000, 1/1/03-indefinite.
- K. Almeroth, "Developing A Dynamic Protocol for Candidate Access Router Discovery," Nokia Graduate Student Fellowship (R. Chalmers), \$26,110, 9/01/02-6/30/03.
- B. Bimber and K. Almeroth, "The Role of Collaborative Groupware in Organizations," Toole Family Foundation, \$182,500 (\$20,000 cash plus \$162,500 in software), 9/1/02-indefinite.
- B. Manjunath, et al., "Digital Multimedia: Graduate Training Program in Interactive Digital Multimedia," National Science Foundation (NSF), \$2,629,373, 4/1/02-3/31/07.
- J. Green, K. Almeroth, et al., "Inquiry in the Online Context: Learning from the Past, Informing the Future," UCSB Research Across Disciplines, \$10,000, 9/1/01-8/31/02.
- K. Almeroth, "Monitoring and Maintaining the Global Multicast Infrastructure," Cisco Systems Inc., \$54,600, 7/1/01-indefinite.
- R. Kemmerer, K. Almeroth, et al., "Hi-DRA High-speed, Wide-area Network Detection, Response, and Analysis," Department of Defense (DoD), \$4,283,500, 5/1/01-4/30/06.

- A. Singh, K. Almeroth, et al., "Digital Campus: Scalable Information Services on a Campus-wide Wireless Network," National Science Foundation (NSF), 1,450,000, 9/15/00-12/31/04.
- K. Almeroth, "Visualizing the Global Multicast Infrastructure," UC MICRO w/ Cisco Systems Inc., \$85,438, 7/1/00-6/30/02.
- H. Lee, K. Almeroth, et al., "Dynamic Sensing Systems," International Telemetering Foundation, \$260,000, 07/01/00-06/30/04.
- B. Bimber and K. Almeroth, "Funding for the Center on Information Technology and Society," \$250,000 from Dialogic (an Intel Company) and \$250,000 from Canadian Pacific.
- K. Almeroth, "CAREER: From Protocol Support to Applications: Elevating Multicast to a Ubiquitous Network Service," National Science Foundation (NSF), \$200,000, 9/1/00-8/31/04.
- K. Almeroth, "Characterizing Multicast Use and Efficiency in the Inter-Domain," Sprint Advanced Technology Laboratories, \$62,500, 3/1/00-indefinite.
- K. Almeroth, "Producing the Next Generation of Multicast Monitoring and Management Protocols and Tools," UC MICRO w/ Cisco Systems Inc., \$124,500, 7/1/99 - 6/30/01.
- K. Almeroth, "Utilizing Satellite Links in the Provision of an Inter-Wide Multicast Service," HRL Laboratories, \$20,000, 7/1/99 - indefinite.
- T. Smith, K. Almeroth, et al., "Alexandria Digital Earth Prototype," National Science Foundation, \$5,400,000, 4/1/99-3/31/04.
- V. Vesna, K. Almeroth, et al., "Online Public Spaces: Multidisciplinary Explorations in Multi-User Environments (OPS:MEME), Phase II," UCSB Research Across Disciplines, \$50,000, 9/1/98-8/31/99.
- K. Almeroth, "Techniques and Analysis for the Provision of Multicast Route Management," UC MICRO w/ Cisco Systems Inc., \$97,610, 7/1/98 - 6/30/00.
- K. Almeroth, "Capturing and Modeling Multicast Group Membership in the Multicast Backbone (MBone)," UC MICRO w/ Hughes Research Labs, \$19,146, 7/1/98 - 12/31/99.
- K. Almeroth, "Building a Content Server for the Next Generation Digital Classroom," UCSB Faculty Research Grant, \$5,000, 7/1/98-6/31/99.

H. Research Honors and Awards

- IEEE Fellow Status, 2013
- Finalist for Best Paper Award, IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON), June 2008
- Best Paper Award, Passive and Active Measurement (PAM) Conference, April 2007
- Outstanding Paper Award, World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA), June 2006
- IEEE Senior Member Status, 2003
- Finalist for Best Student Paper Award, ACM Multimedia, December 2002
- Outstanding Paper Award, World Conference on Educational Multimedia, Hypermedia & Telecommunications (ED MEDIA), June 2002
- Computing Research Association (CRA) Digital Government Fellowship, 2001
- National Science Foundation CAREER Award, 2000

- Best Paper Award, 7th International World Wide Web Conference, April 1998

III. Service

A. Professional Activities

1. Society Memberships

Member, Association for Computing Machinery (ACM): 1993-present
 Member, ACM Special Interest Group on Communications (SIGComm): 1993-present
 Fellow, Institute of Electrical and Electronics Engineers (IEEE): 1993-present
 Member, IEEE Communications Society (IEEE ComSoc): 1993-present
 Member, American Society for Engineering Education (ASEE): 2003-2006

2. Review Work for Technical Journals and Publishers

NSF CISE research proposals, IEEE/ACM Transactions on Networking, IEEE/ACM Transactions on Computers, IEEE/ACM Transactions on Communications, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Multimedia, IEEE Communications, IEEE Communications Letters, IEEE Network, IEEE Internet Computing, IEEE Multimedia, IEEE Aerospace & Electronics Systems Magazine, ACM Transactions on Internet Technology, ACM Transactions on Multimedia Computing, Communications and Applications, ACM Computing Surveys, ACM Computer Communications Review, ACM Computeres in Entertainment, ACM/Springer Multimedia Systems Journal, AACE Journal of Interactive Learning (JILR), International Journal of Computer Mathematics, Journal of Communications and Networks, Journal of Parallel and Distributed Computing, Journal of Network and Systems Management, Journal of High Speed Networking, Journal of Communications and Networks, Journal on Selected Areas in Communications, Journal of Wireless Personal Communications, Personal Mobile Communications, Annals of Telecommunications, International Journal of Wireless and Mobile Computing, Pervasive and Mobile Computing (PMC), Wireless Networks Journal, Computer Networks Journal, Cluster Computing, Computer Communications, Mobile Computing and Communications Review, Performance Evaluation, Software--Practice & Experience, Information Processing Letters, ACM Sigcomm, ACM Multimedia, ACM Network and System Support for Digital Audio and Video Workshop (NOSSDAV), ACM Sigcomm Workshop on the Economics of Peer-to-Peer Systems (P2PEcon), ACM Sigcomm Workshop on Challenged Networks (CHANTS), IEEE Infocom, IEEE Globecom, IEEE Global Internet (GI) Symposium, IEEE Globecom Automatic Internet Symposium, IEEE Globecom Internet Services and Enabling Technologies (IS&ET) Symposium, IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), IEEE International Conference on Network Protocols (ICNP), IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON), IEEE International Conference on Multimedia and Exposition (ICME), IEEE International Conference on Communications (ICC), IEEE International Conference on Parallel and Distributed Systems (ICPADS) IEEE International Symposium on High-Performance Distributed Computing (HPDC), IEEE International Conference on Distributed Computing Systems (ICDCS), IEEE International Workshop on Quality of Service (IWQoS), IEEE/IFIP Network Operations and Management Symposium (NOMS), IFIP/IEEE International Symposium on Integrated Network Management (IM), IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS), IEEE Aerospace & Electronics Systems Magazine, SPIE Conference on Multimedia Computing and Networking (MMCN), IFIP Networking, IASTED International Conference on Information Systems and Databases

(ISD), IASTED International Conference on Communications, Internet, and Information Technology, IASTED International Conference on Internet and Multimedia Systems and Applications (IMSA), IASTED International Conference on European Internet and Multimedia Systems and Applications (EuroIMSA), IASTED International Conference on Communications and Computer Networks (CCN), IASTED International Conference on Software Engineering and Applications (SEA), International Conference on Computer and Information Science (ICIS), International Association for Development of the Information Society (IADIS) International Conference on the WWW/Internet, Workshop on Network Group Communication (NGC), International Conference on Next Generation Communication (CoNEXT), International Conference on Parallel Processing (ICPP), International Conference on Computer Communications and Networks (IC3N), International Workshop on Hot Topics in Peer-to-Peer Systems (Hot-P2P), International Workshop on Wireless Network Measurements (WinMee), International Workshop on Incentive-Based Computing (IBC), International Workshop on Multi-hop Ad Hoc Networks (REALMAN), International Workshop on Broadband Wireless Multimedia: Algorithms, Architectures and Applications (BroadWIM), International Packet Video (PV) Workshop, High Performance Networking Conference (HPN), International Parallel Processing Symposium (IPPS), International Symposium on Innovation in Information & Communication Technology (ISIICT), Workshop on Coordinated Quality of Service in Distributed Systems (COQODS), Pearson Education (Cisco Press) Publishers, Macmillan Technical Publishing, and Prentice Hall Publishers.

3. Conference Committee Activities

Journal/Magazine Editorial Board

IEEE/ACM Transactions on Networking (ToN): 2003-2009, 2013-present
 Journal of Network and Systems Management (JNSM): 2011-present
 ACM Computers in Entertainment: 2002-present
 IEEE Network: 1999-2012
 AACE Journal of Interactive Learning Research (JILR): 2003-2012
 IEEE Transactions on Mobile Computing (TMC): 2006-2011
 ACM Computer Communications Review (CCR): 2006-2010

Journal/Magazine Guest Editorship

IEEE Journal on Selected Areas in Communications (JSAC) Special Issue on "Delay and Disruption Tolerant Wireless Communication", June 2008
 Computer Communications Special Issue on "Monitoring and Measuring IP Networks", Summer 2005
 Computer Communications Special Issue on "Integrating Multicast into the Internet", March 2001

Conference/Workshop Steering Committee

IEEE International Conference on Network Protocols (ICNP): 2007-present
 ACM Sigcomm Workshop on Challenged Networks (CHANTS): 2006-present
 International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV): 2001-present, 2005-2011 (chair), 2012-present (co-chair)
 IEEE Global Internet (GI) Symposium: 2005-2013
 IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2005-2009

Conference/Workshop Chair

International Conference on Communication Systems and Networks (COMSNETS): 2014 (co-chair)
 ACM International Conference on Next Generation Communication (CoNext): 2013 (co-chair)
 ACM RecSys News Recommender Systems (NRS) Workshop and Challenge: 2013 (co-chair)
 ACM Sigcomm Workshop on Challenged Networks (CHANTS): 2006 (co-chair)

IEEE International Conference on Network Protocols (ICNP): 2003 (co-chair), 2006
International Workshop on Wireless Network Measurements (WiNMee): 2006 (co-chair)
IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2002 (co-chair)
International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV): 2002 (co-chair), 2003 (co-chair)
IEEE Global Internet (GI) Symposium: 2001 (co-chair)
International Workshop on Networked Group Communication (NGC): 2000 (co-chair)

Program Chair

International Conference on Computer Communication and Networks (ICCCN): 2015 (Track co-chair)
International Conference on Communication Systems and Networks (COMSNETS): 2010
IEEE International Conference on Network Protocols (ICNP): 2008 (co-chair)
IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON): 2007 (co-chair)
IFIP Networking: 2005 (co-chair)

Posters/Demonstrations Chair

ACM Sigcomm: 2012 (co-chair)

Student Travel Grants Chair

ACM Sigcomm: 2010 (co-chair)

Publicity Chair

IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2004 (co-chair)

Keynote Chair

IEEE Infocom: 2005 (co-chair)

Local Arrangements Chair

Internet2 "Field of Dreams" Workshop: 2000

Tutorial Chair

ACM Multimedia: 2000
IEEE International Conference on Network Protocols (ICNP): 1999

Panel/Session Organizer

NSF ANIR PI 2003 Panel on "Core Networking Issues and Protocols for the Internet"
CCW 2001 Session on "Multicast/Peer-to-Peer Networking"
NOSSDAV 2001 Panel on "Multimedia After a Decade of Research"
NGC 2000 Panel on "Multicast Pricing"

Technical Program Committee

IEEE International Conference on Network Protocols (ICNP): 1999, 2000, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009 (Area Chair), 2010 (Area Chair), 2011 (Area Chair), 2012 (Area Chair), 2013, 2014 (Area Chair), 2015 (Area Chair), 2016 (Area Chair)
International Workshop on Network and Operating System Support for Digital Audio and Video

(NOSSDAV): 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016

ACM Multimedia (MM): 2001, 2003, 2004, 2005 (short paper), 2006, 2007, 2008, 2008 (short paper), 2010, 2011, 2012, 2013, 2015

IEEE Conference on Sensor and Ad Hoc Communications and Networks (SECON): 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 (Area Chair), 2012 (Area Chair), 2013, 2014 (Area Chair), 2015, 2016 (Area Chair)

IEEE/IFIP Network Operations and Management Symposium (NOMS): 2004, 2006, 2010

IEEE Infocom: 2004, 2005, 2006, 2008, 2009, 2010 (Area Chair), 2011 (Area Chair), 2012 (Area Chair)

IFIP Networking: 2004, 2005, 2006, 2007, 2010, 2011, 2012, 2013, 2014, 2015, 2016

ACM Workshop on Mobile Video (MoVid): 2014, 2015, 2016

ACM Student Research Competition (SRC) Grand Finals: 2014

Mobile and Social Computing for Collaborative Interactions (MSC): 2014

IEEE Conference on Communications and Network Security (CNS): 2013

IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM): 2005, 2006, 2007, 2008, 2009, 2010

ACM Sigcomm Workshop on Challenged Networks (CHANTS): 2006, 2008, 2009, 2010, 2011, 2012, 2016

IEEE International Conference on Distributed Computing Systems (ICDCS): 2006, 2010, 2011, 2012, 2013

International Workshop on Wireless Network Measurements (WinMee): 2006, 2008, 2010

ACM Sigcomm: 2008 (poster), 2010

IEEE International Conference on Computer Communication and Networks (IC3N): 2008, 2009, 2010, 2011, 2012

International Conference on Communication Systems and Networks (COMSNETS): 2009, 2010, 2011, 2012, 2013

International Conference on Sensor Networks (SENSORNETS): 2012

International Workshop on Social and Mobile Computing for Collaborative Environments (SOMOCO): 2012

Workshop on Scenarios for Network Evaluation Studies (SCENES): 2009, 2010, 2011

ACM Multimedia Systems (MMSys): 2010, 2011, 2012, 2015, 2016

IEEE International Conference on Pervasive Computing and Communications (PerCom): 2010

IEEE Wireless Communications and Networking Conference (WCNC): 2010, 2011

ACM International Symposium on Mobility Management and Wireless Access (MobiWac): 2010, 2011

International Conference on Computing, Networking and Communications, Internet Services and Applications Symposium (ICNC-ISA): 2012, 2013

IEEE WoWMoM Workshop on Hot Topics in Mesh Networking (HotMesh): 2010, 2011, 2012, 2013

IEEE Workshop on Pervasive Group Communication (PerGroup): 2010

ACM International Conference on Next Generation Communication (CoNEXT): 2005, 2006, 2007, 2009, 2012

IEEE International Conference on Broadband Communications, Networks, and Systems (BroadNets)

Wireless Communications, Networks and Systems Symposium: 2007, 2008, 2009

IEEE International Conference on Broadband Communications, Networks, and Systems (BroadNets)

Internet Technologies Symposium: 2007, 2008, 2009

International Workshop on Mobile and Networking Technologies for Social Applications (MONET): 2008, 2009

Extreme Workshop on Communication-The Midnight Sun Expedition (ExtremeCom): 2009

IEEE International Workshop on Cooperation in Pervasive Environments (CoPE): 2009

International Workshop on the Network of the Future (FutureNet): 2009, 2010, 2011, 2012

IEEE International Conference on Multimedia and Exposition (ICME): 2010

SPIE Conference on Multimedia Computing and Networking (MMCN): 2004, 2008

ACM Sigcomm Workshop on the Economics of Networks, Systems, and Computation (NetEcon):

2008

IEEE International Conference on Communications (ICC): 2008
 IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS): 2008
 IFIP/IEEE International Symposium on Integrated Network Management (IM): 2005, 2007
 Global Internet (GI) Symposium: 2001, 2002, 2004, 2006, 2007
 IEEE/ACM International Conference on High Performance Computing (HiPC): 2007
 ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc): 2007
 IEEE Workshop on Embedded Systems for Real-Time Multimedia (ESTIMedia): 2007
 IEEE/IFIP Wireless On Demand Network Systems and Services (WONS): 2007
 IFIP/IEEE International Conference on Management of Multimedia Networks and Services (MMNS): 2001, 2002, 2003, 2004, 2005, 2006
 IASTED International Conference on European Internet and Multimedia Systems and Applications (EuroIMSA): 2004, 2006
 IEEE International Conference on Parallel and Distributed Systems (ICPADS): 2005, 2006
 IEEE Globecom Internet Services and Enabling Technologies (IS&ET) Symposium: 2006
 International Workshop on Incentive-Based Computing (IBC): 2006
 IEEE International Workshop on Quality of Service (IWQoS): 2006, 2014, 2015
 International Workshop on Multi-hop Ad Hoc Networks (REALMAN): 2006
 IEEE Globecom Automatic Internet Symposium: 2005
 ACM Sigcomm Workshop on the Economics of Peer-to-Peer Systems (P2PEcon): 2005
 International Conference on Parallel Processing (ICPP): 2001, 2003, 2004
 International Packet Video (PV) Workshop: 2002, 2003, 2004
 IEEE International Symposium on High-Performance Distributed Computing (HPDC): 2004
 ACM Sigcomm: 2004 (poster)
 International Workshop on Broadband Wireless Multimedia: Algorithms, Architectures and Applications (BroadWIM): 2004
 International Symposium on Innovation in Information & Communication Technology (ISIICT): 2004
 Workshop on Coordinated Quality of Service in Distributed Systems (COQODS): 2004
 IASTED International Conference on Networks and Communication Systems (NCS): 2004
 IASTED International Conference on Communications, Internet, and Information Technology (CIIT): 2004
 IASTED International Conference on Internet and Multimedia Systems and Applications (IMSA): 2003, 2004
 International Workshop on Networked Group Communication (NGC): 1999, 2000, 2001, 2002, 2003
 International Association for Development of the Information Society (IADIS) International Conference on the WWW/Internet: 2003
 International Conference on Computer and Information Science (ICIS): 2003
 Human.Society@Internet: 2003
 IASTED International Conference on Communications and Computer Networks (CCN): 2002
 The Content Delivery Networks (CDN) Event: 2001
 IP Multicast Initiative Summit: 1998, 1999, 2000
 Corporation for Education Network Initiatives in California (CENIC): 1999
 Internet Bandwidth Management Summit (iBAND): 1998, 1999

B. Technical Activities

1. Working Groups

Internet2 Working Group on Multicast, Chair: 1998-2005
 IEEE Communications Society Internet Technical Committee (ITC), Conference Coordinator: 2000-2004
 IETF Multicast Directorate (MADDOGS), Member: 1999-2001

IASTED Technical Committee on the Web, Internet and Multimedia, Member: 2002-2005
Internet Engineering Task Force (IETF), various working groups: 1995-present

2. Meeting Support Work

Internet Engineering Task Force MBone broadcasts: 1995-2005
Conference MBone broadcasts: Sigcomm '99, and '00
Interop+Networld Network Operations Center (NOC) Team Member: 1995-1997
ACM Multimedia technical staff: 1994

C. University of California Committees

1. Department of Computer Science Committees

Public Relations: 2005-2006 (chair 2005-2006), 2009-2011 (chair 2009-2011)
Strategic Planning: 2000-2002, 2003-2006, 2009-2011
Undergraduate Advising and Affairs: 2006-2007, 2014-2015
Vice Chair: 2000-2005
Graduate Admissions: 2000-2005 (chair 2000-2005), 2011-2012
Graduate Affairs: 2000-2005 (co-chair 2000-2005)
Teaching Administration: 2000-2005
Facilities: 1997-2001 (chair 1999-2000), 2006-2007
External Relations: 1999-2002
Computer Engineering Public Relations: 2011-2012
Computer Engineering Awards: 2011-2012
Computer Engineering Administration/Recruiting: 1998-2001
Computer Engineering Lab and Computer Support: 1998-2001
Faculty Recruiting: 1999-2002
Graduate Advising: 1998-1999, 2000-2005

2. University Committees

Member, Campus Budget and Planning: 2013-2015
Faculty, Cognitive Science Program: 2006-present
Faculty, Technology Management Program (TMP): 2003-2014
Faculty, Media Arts and Technology (MAT) Program: 1998-2014
Faculty, Computer Engineering Degree Program: 1998-present
Steering Committee, Center for Information Technology and Society (CITS): 2012-present
Associate Director, Center for Information Technology and Society (CITS): 1999-2012
Member, Campus Committee on Committees: 2010-2013
Member, Campus Income and Recharge Committee: 2010-2013
Member, College of Engineering Executive Committee: 2010-2012 (chair 2011-2012), 2014-2015 (chair 2014-2015)
Member, Distinguished Teaching Award Committee: 2009, 2010, 2011
Member, Campus Classroom Design and Renovation Committee: 2003-2010
Member, ISBER Advisory Committee: 2008-2011
Member, Fulbright Campus Review Committee: 2007
Member, Faculty Outreach Grant Program Review Committee: 2007
Executive Vice Chancellor's Information Technology Fee Committee: 2005-2006

Council on Research and Instructional Resources: 2003-2006
Executive Vice Chancellor's Working Group on Graduate Diversity: 2004-2005
Member, Engineering Pavillion Planning Committee: 2003-2005
Information Technology Board: 2001-2004
Executive Committee, Center for Entrepreneurship & Engineering Management (CEEM): 2001-2004

3. System Wide Committees

UCSB Representative to the Committee on Information Technology and Telecommunications Policy (ITTP): 2003-2005
UCSB Representative to the Executive Committee, Digital Media Innovation (DiMI): 1998-2003

D. Georgia Tech Committees and Service (while a graduate student)


Graduate Student Body President: 1994-1995
Georgia Tech Executive Board: 1994-1995
Georgia Tech Alumni Association Executive Committee: 1994-1995
Dean of Students National Search Committee: 1995
Institute Strategic Planning Committee: 1994-1996

Exhibit Copying-1

Exhibit Copying-1 – Evidence of Documentation Copying

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<p>Cisco IOS XE 3.5</p> <p>Effective date of registration: 11/24/2014</p>	<p>Usage Guidelines For additional notification types, see the Related Commands table for this command.</p> <p>SNMP notifications can be sent as traps or inform requests. This command enables both traps and inform requests for the specified notification types. To specify whether the notifications should be sent as traps or informs, use the snmp-server host [traps informs] command.</p> <p>If you do not enter an snmp-server enable traps command, no notifications controlled by this command are sent. In order to configure the router to send these SNMP notifications, you must enter at least one snmp-server enable traps command. If you enter the command with no keywords, all notification types are enabled. If you enter the command with a keyword, only the notification type related to that keyword is enabled. In order to enable multiple types of notifications, you must issue a separate snmp-server enable traps command for each notification type and notification option.</p> <p>The snmp-server enable traps command is used in conjunction with the snmp-server host command. Use the snmp-server host command to specify which host or hosts receive SNMP notifications. In order to send notifications, you must configure at least one snmp-server host command.</p> <p>Cisco IOS Configuration Fundamentals and Network Management Command Reference (2004), at 1034; <i>see also</i> Cisco IOS Asynchronous Transfer Mode Command Reference (2011), at 535.</p>	<p>snmp-server enable traps</p> <p>The snmp-server enable traps command enables the transmission of Simple Network Management Protocol (SNMP) notifications as traps or inform requests. This command enables both traps and inform requests for the specified notification types. The snmp-server host command specifies the notification</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1990.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1918; Arista User Manual v. 4.12.3 (7/17/13), at 1680; Arista User Manual, v. 4.11.1 (1/11/13), at 1365; Arista User Manual v. 4.10.3 (10/22/12), at 1132; Arista User Manual v. 4.9.3.2 (5/3/12), at 888; Arista User Manual v. 4.8.2 (11/18/11), at 696; Arista User Manual v. 4.7.3 (7/18/11), at 552.</p>

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<p>Cisco IOS XE 3.5</p> <p>Effective date of registration: 11/24/2014</p>	<pre>Router# show interfaces atm 0/0/0 ATM0/0/0 is up, line protocol is up Hardware is cyBus ATM Internet address is 10.1.1.1/24 MTU 4470 bytes, sub MTU 4470, BW 156250 Kbit, DLY 80 usec, rely 255/255, load 1/255 Encapsulation ATM, loopback not set, keepalive set (10 sec) Encapsulation(s): AAL5, PVC mode 256 TX buffers, 256 RX buffers, 2048 maximum active VCs, 1024 VCs per VP, 1 current VCCs VC idle disconnect time: 300 seconds Last input never, output 00:00:05, output hang never Last clearing of "show interface" counters never Queueing strategy: fifo Output queue 0/40, 0 drops; input queue 0/75, 0 drops 5 minute input rate 0 bits/sec, 1 packets/sec 5 minute output rate 0 bits/sec, 1 packets/sec 5 packets input, 560 bytes, 0 no buffer Received 0 broadcasts, 0 runs, 0 giants 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 5 packets output, 560 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output buffers swapped out</pre> <p>Cisco IOS Asynchronous Transfer Mode Command Reference (2011), at 476.</p>	<p>Examples</p> <ul style="list-style-type: none"> These commands display interface counters, clear the counters, then display the counters again. <pre>switch#show interfaces ethernet 1 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff) MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 minutes input rate 001 bps (0.0% with framing), 0 packets/sec 5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec 2285170854005 packets input, 225028582832583 bytes Received 29769609741 broadcasts, 3073437605 multicast 113 runs, 1 giants 118 input errors, 117 CRC, 0 alignment, 18 symbol 27511409 PAUSE input 335031607678 packets output, 27845413138330 bytes Sent 14282316688 broadcasts, 54045824072 multicast 108 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 637.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 514; Arista User Manual, v. 4.11.1 (1/11/13), at 413; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.</p>
<p>Cisco IOS XE 3.5</p> <p>Effective date of registration: 11/24/2014</p>	<p>show vrrp</p> <p>To display a brief or detailed status of one or all configured Virtual Router Redundancy Protocol (VRRP) groups on the router, use the show vrrp command in privileged EXEC mode.</p> <p>show vrrp [all brief]</p> <p>Cisco IOS IP Application Services Command Reference (2011), at 76.</p>	<p>19.2.3.2 Verify VRRP IPv6 Configurations</p> <p>Use the following commands to display the VRRP configurations and status.</p> <p>Show VRRP Group</p> <p>The show vrrp command displays the status of configured Virtual Router Redundancy Protocol (VRRP) groups on a specified interface.</p> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 879.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 793; Arista User Manual v. 4.10.3 (10/22/12), at 548; Arista User Manual v. 4.9.3.2 (5/3/12), at 468.</p>

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<p>Cisco IOS 15.2</p> <p>Effective date of registration: 11/24/2014</p>	<p>Usage Guidelines Use the ip multicast multipath command to enable load splitting of IP multicast traffic across multiple equal-cost paths.</p> <p>If two or more equal-cost paths from a source are available, unicast traffic will be load split across those paths. However, by default, multicast traffic is not load split across multiple equal-cost paths. In general, multicast traffic flows down from the reverse path forwarding (RPF) neighbor. According to the Protocol Independent Multicast (PIM) specifications, this neighbor must have the highest IP address if more than one neighbor has the same metric.</p> <p>Configuring load splitting with the ip multicast multipath command causes the system to load split multicast traffic across multiple equal-cost paths based on source address using the S-hash algorithm. When the ip multicast multipath command is configured and multiple equal-cost paths exist, the path in which multicast traffic will travel is selected based on the source IP address. Multicast traffic from different sources will be load split across the different equal-cost paths. Load splitting will not occur across equal-cost paths for multicast traffic from the same source sent to different multicast groups.</p> <p>Cisco IOS IP Multicast Command Reference (2011), at 293.</p>	<p>23.3.2 Equal Cost Multipath Routing (ECMP) and Load Sharing</p> <p>Multiple routes that have identical destinations and administrative distances comprise an Equal Cost Multi-Path (ECMP) route. The switch attempts to spread traffic to all ECMP route paths equally.</p> <p>If two or more equal-cost paths from a source are available, unicast traffic is load split across those paths. By default, multicast traffic is not load split. Multicast traffic generally flows from the reverse path forwarding (RPF) neighbor and, according to Protocol Independent Multicast (PIM) specifications, the neighbor with the highest IP address has precedence when multiple neighbors have the same metric.</p> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 1191.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1042; Arista User Manual, v. 4.11.1 (1/11/13), at 398; Arista User Manual v. 4.10.3 (10/22/12), at 320.</p>
<p>Cisco IOS 15.2</p> <p>Effective date of registration: 11/24/2014</p>	<p>Usage Guidelines Use the ip multicast boundary command to configure an administratively scoped boundary on an interface in order to filter source traffic coming into the interface and prevent mroute states from being created on the interface.</p> <p> Note An IP multicast boundary enables reuse of the same multicast group address in different administrative domains.</p> <p>Cisco IOS IP Multicast Command Reference (2011), at 264.</p>	<p>Multicast Boundary Configuration</p> <p>The multicast boundary specifies subnets where source traffic entering an interface is filtered to prevent the creation of mroute states on the interface. The interface is not included in the outgoing interface list (OIL). Multicast pim, igmp or data packets are not allowed to flow across the boundary from either direction. The boundary facilitates the use of a multicast group address in different administrative domains.</p> <p>The ip multicast boundary command configures the multicast boundary. The multicast boundary can be specified through multiple IPv4 subnets or one standard IPv4 ACL.</p> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 1704.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1482; Arista User Manual, v. 4.11.1 (1/11/13), at 1184; Arista User Manual v. 4.10.3 (10/22/12), at 1018; Arista User Manual v. 4.9.3.2 (5/3/12), at 776.</p>

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<p>Cisco IOS 15.0</p> <p>Effective Date of Registration: 11/28/2014</p>	<p>Usage Guidelines Enabling PIM on an interface also enables Internet Group Management Protocol (IGMP) operation on that interface. An interface can be configured to be in dense mode, sparse mode, or sparse-dense mode. The mode describes how the Cisco IOS software populates its multicast routing table and how the software forwards multicast packets it receives from its directly connected LANs. Dense mode interfaces are always added to the table when the multicast routing table is populated. Sparse mode interfaces are added to the table only when periodic join messages are received from downstream routers, or there is a directly connected member on the interface.</p> <p>Cisco IOS IP Multicast Command Reference (2008), at IMC-233–34</p>	<p>33.3.1 Enabling IGMP</p> <p>Enabling PIM on an interface also enables IGMP on that interface. When the switch populates the multicast routing table, interfaces are added to the table only when periodic join messages are received from downstream routers, or when there is a directly connected member on the interface.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1778.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1726; Arista User Manual v. 4.12.3 (7/17/13), at 1504; Arista User Manual, v. 4.11.1 (1/11/13), at 1204; Arista User Manual v. 4.10.3 (10/22/12), at 998; Arista User Manual v. 4.9.3.2 (5/3/12), at 756; Arista User Manual v. 4.8.2 at 578; Arista User Manual v. 4.7.3 (7/18/11), at 458; Arista User Manual v. 4.6.0 (12/22/2010), at 308</p>
<p>Cisco IOS 15.2</p> <p>Effective date of registration: 11/24/2014</p>	<p>Usage Guidelines SNMP notifications can be sent as traps or inform requests. This command enables both traps and inform requests for the specified notification types. PIM notifications are defined in the CISCO-PIM-MIB.mib and PIM-MIB.mib files, available from Cisco.com at http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.</p> <p>Cisco IOS IP Multicast Command Reference (2011), at 742</p>	<p>SNMP Commands Chapter 37 SNMP</p> <p>snmp-server enable traps</p> <p>The snmp-server enable traps command enables the transmission of Simple Network Management Protocol (SNMP) notifications as traps or inform requests. This command enables both traps and inform requests for the specified notification types. The snmp-server host command specifies the notification type (traps or informs). Sending notifications requires at least one snmp-server host command.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1990.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1918; Arista User Manual v. 4.12.3 (7/17/13), at 1680; Arista User Manual, v. 4.11.1 (1/11/13), at 1365; Arista User Manual v. 4.10.3 (10/22/12), at 1132; Arista User Manual v. 4.9.3.2 (5/3/12), at 888; Arista User Manual v. 4.8.2 at 696; Arista User Manual v. 4.7.3 (7/18/11), at 552.</p>

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<p>Cisco IOS 15.2</p> <p>Effective date of registration: 11/24/2014</p>	<p>Usage Guidelines The local proxy ARP feature allows the Multilayer Switching Feature Card (MSFC) to respond to ARP requests for IP addresses within a subnet where normally no routing is required. With the local proxy ARP feature enabled, the MSFC responds to all ARP requests for IP addresses within the subnet and forwards all traffic between hosts in the subnet. Use this feature only on subnets where hosts are intentionally prevented from communicating directly to the Catalyst 6500 series switch on which they are connected.</p> <p>Before the local proxy ARP feature can be used, the IP proxy ARP feature must be enabled. The IP proxy ARP feature is enabled by default.</p> <p>Cisco IOS IP Addressing Services Command Reference (2011), at 394</p>	<p>ip local-proxy-arp</p> <p>The ip local-proxy-arp command enables local proxy ARP (Address Resolution Protocol) on the configuration mode interface. Local proxy ARP programs the switch to respond to ARP requests for IP addresses within a subnet where routing is not normally required. A typical local proxy arp application is supporting isolated private VLANs that communicate with each other by routing packets.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1276.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1231; Arista User Manual v. 4.12.3 (7/17/13), at 1073; Arista User Manual, v. 4.11.1 (1/11/13), at 856; Arista User Manual v. 4.10.3 (10/22/12), at 707.</p>
<p>Cisco IOS 15.2</p> <p>Effective date of registration: 11/24/2014</p>	<p>Usage Guidelines IP uses a 32-bit mask that indicates which address bits belong to the network and subnetwork fields, and which bits belong to the host field. This is called a <i>netmask</i>. By default, show commands display an IP address and then its netmask in dotted decimal notation. For example, a subnet would be displayed as 10.108.11.0 255.255.255.0.</p> <p>Cisco IOS IP Addressing Services Command Reference (2011), at 452</p>	<ul style="list-style-type: none"> • SUBNET_SIZE this functions as a sanity check to ensure it is not a network or broadcast network. Options include: <ul style="list-style-type: none"> — netmask ipv4 addr The network mask that indicates which address bits belong to the network and subnetwork fields and which bits belong to the host field. Specify the netmask of the network to which the pool addresses belong (dotted decimal notation). <p>Arista User Manual v. 4.13.6F (4/14/2014), at 1233.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1075.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Route Target Extended Community Attribute</p> <p>The route target (RT) extended community attribute is configured with the rt keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.</p> <p>Site of Origin Extended Community Attribute</p> <p>The site of origin (SOO) extended community attribute is configured with the soo keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.</p> <p>IP Extended Community-List Configuration Mode</p> <p>Named and numbered extended community lists can be configured in IP Extended community-list configuration mode. To enter IP Extended community-list configuration mode, enter the ip extcommunity-list command with either the expanded or standard keyword followed by the extended community list name. This configuration mode supports all of the functions that are available in global configuration mode. In addition, you can perform the following operations:</p> <p>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IRP-118</p>	<p>ip extcommunity-list expanded</p> <p>The ip extcommunity-list expanded command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs). The command uses regular expressions to name the communities specified by the list.</p> <ul style="list-style-type: none"> • Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. • Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1590.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1540; Arista User Manual v. 4.12.3 (7/17/13), at 1364; Arista User Manual, v. 4.11.1 (1/11/13), at 1110; Arista User Manual v. 4.10.3 (10/22/12), at 896; Arista User Manual v. 4.9.3.2 (5/3/12), at 689; Arista User Manual v. 4.8.2 at 519.</p>
<p>Cisco IOS 15.2</p> <p>Effective date of registration: 11/24/2014</p>	<p>Usage Guidelines</p> <p>Extended community attributes are used to configure, filter, and identify routes for virtual routing and forwarding instances (VRFs) and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).</p> <p>The match extcommunity command is used to configure match clauses that use extended community attributes in route maps. All of the standard rules of match and set clauses apply to the configuration of extended community attributes.</p> <p>Cisco IOS IP Routing: EIGRP Command Reference (2011), at 92</p>	<p>BGP extended communities configure, filter, and identify routes for virtual routing, forwarding instances (VRFs), and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).</p> <p>Extended community clauses provide route target and site of origin parameter options:</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1552.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1502; Arista User Manual v. 4.12.3 (7/17/13), at 1334; Arista User Manual, v. 4.11.1 (1/11/13), at 1083; Arista User Manual v. 4.10.3 (10/22/12), at 896; Arista User Manual v. 4.9.3.2 (5/3/12), at 668; Arista User Manual v. 4.8.2 (11/18/11) at 500.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Expanded Community Lists</p> <p>Expanded community lists are used to filter communities using a regular expression. Regular expressions are used to configure patterns to match community attributes. The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in.</p> <p>Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it will match the earliest part first. For more information about configuring regular expressions, see the Regular Expressions appendix of the <i>Cisco IOS Terminal Services Configuration Guide</i>.</p> <p>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IRP-113–14</p>	<p>Chapter 3 Command-Line Interface</p> <p>Processing Commands</p> <pre> ^rxy\$ ^rxy 23 21 rxy .rxy, rxy .rxy. </pre> <p>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it matches the earliest part first.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 107.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 105; Arista User Manual v. 4.12.3 (7/17/13), at 95; Arista User Manual, v. 4.11.1 (1/11/13), at 65; Arista User Manual v. 4.10.3 (10/22/12), at 57; Arista User Manual v. 4.9.3.2 (5/3/12), at 53; Arista User Manual v. 4.8.2 (11/18/11), at 49.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Router# show ip route</p> <p>Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2 ia - IS-IS inter area, * - candidate default, U - per-user static route o - ODR, P - periodic downloaded static route</p> <p>Gateway of last resort is not set</p> <p>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IP2R-553</p>	<p>IPv4 Routing</p> <p>Chapter 23 IPv4</p> <p>Examples</p> <ul style="list-style-type: none"> This command displays IP routes learned through BGP. <pre> switch#show ip route bgp Codes: C - connected, S - static, K - kernel, O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1, E2 - OSPF external type 2, N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type2, B I - iBGP, B E - eBGP, R - RIP, A - Aggregate B E 170.44.48.0/23 [20/0] via 170.44.254.78 B E 170.44.50.0/23 [20/0] via 170.44.254.78 B E 170.44.52.0/23 [20/0] via 170.44.254.78 B E 170.44.54.0/23 [20/0] via 170.44.254.78 B E 170.44.254.112/30 [20/0] via 170.44.254.78 B E 170.53.0.34/32 [1/0] via 170.44.254.78 B I 170.53.0.35/32 [1/0] via 170.44.254.13 via 170.44.254.20 via 170.44.254.67 via 170.44.254.35 via 170.44.254.98 switch> </pre> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 1188.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1039; Arista User Manual, v. 4.11.1 (1/11/13), at 838; Arista User Manual v. 4.10.3 (10/22/12), at 685.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Usage Guidelines The <code>clear ip bgp</code> command can be used to initiate a hard reset or soft reconfiguration. A hard reset tears down and rebuilds the specified peering sessions and rebuilds the BGP routing tables. A soft reconfiguration uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. Soft reconfiguration uses stored update information at the cost of additional memory for storing the updates, to allow you to apply new BGP policy without disrupting the network. Soft reconfiguration can be configured for inbound or outbound sessions.</p> <p>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IRP-69</p>	<p>clear ip bgp</p> <p>The <code>clear ip bgp</code> command removes BGP IPv4 learned routes from the routing table, reads all routes from designated peers, and sends routes to those peers as required.</p> <ul style="list-style-type: none"> a hard reset tears down and rebuilds the peering sessions and rebuilds BGP routing tables. a soft reset uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. <p>Soft resets use stored update information to apply new BGP policy without disrupting the network.</p> <p>Routes that are read or sent are processed through modified route maps or AS-path access lists. The command can also clear the switch's BGP sessions with its peers.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014, at 1577.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1527; Arista User Manual v. 4.12.3 (7/17/13), at 1358; Arista User Manual, v. 4.11.1 (1/11/13), at 1104; Arista User Manual v. 4.10.3 (10/22/12), at 916; Arista User Manual v. 4.9.3.2 (5/3/12), at 683; Arista User Manual v. 4.8.2 (11/18/11), at 513; Arista User Manual v. 4.7.3 (7/18/11), at 378.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>max-metric router-lsa</p> <p>To configure a router that is running the Open Shortest Path First (OSPF) protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their shortest path first (SPF) calculations, use the <code>max-metric router-lsa</code> command in router configuration mode. To disable the advertisement of a maximum metric, use the <code>no</code> form of this command.</p> <pre>max-metric router-lsa [on-startup {seconds wait-for-bgp}] no max-metric router-lsa [on-startup {seconds wait-for-bgp}]</pre> <p>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IP2R-591</p>	<p>Chapter 25 Open Shortest Path First – Version 2 OSPFv2 Commands</p> <p>max-metric router-lsa (OSPFv2)</p> <p>The <code>max-metric router-lsa</code> command allows the OSPF protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their SPF calculations.</p> <p>The <code>no max-metric router-lsa</code> and default <code>max-metric router-lsa</code> commands disable the advertisement of a maximum metric.</p> <p>Platform all Command Mode Router-OSPF Configuration</p> <p>Command Syntax</p> <pre>max-metric router-lsa [EXTERNAL] [STUB] [STARTUP] [SUMMARY] no max-metric router-lsa [EXTERNAL] [STUB] [STARTUP] [SUMMARY] default max-metric router-lsa [EXTERNAL] [STUB] [STARTUP] [SUMMARY]</pre> <p>All parameters can be placed in any order.</p> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 1389.</p>

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<div>Cisco IOS 12.4</div> <div>Effective date of registration: 8/12/2005</div>	<table><tr><td>adv-router [ip-address]</td><td>(Optional) Displays all the LSAs of the specified router. If no IP address is included, the information is about the local router itself (in this case, the same as self-originate).</td></tr><tr><td>link-state-id</td><td><div>(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's LS type. It must be entered in the form of an IP address.</div><div>When the link state advertisement is describing a network, the <i>link-state-id</i> can take one of two forms:</div><div>The network's IP address (as in type 3 summary link advertisements and in autonomous system external link advertisements).</div><div>A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.)</div><div>When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID.</div><div>When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0).</div></td></tr></table> <div>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IP2R-613</div>	adv-router [ip-address]	(Optional) Displays all the LSAs of the specified router. If no IP address is included, the information is about the local router itself (in this case, the same as self-originate).	link-state-id	<div>(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's LS type. It must be entered in the form of an IP address.</div> <div>When the link state advertisement is describing a network, the <i>link-state-id</i> can take one of two forms:</div> <div>The network's IP address (as in type 3 summary link advertisements and in autonomous system external link advertisements).</div> <div>A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.)</div> <div>When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID.</div> <div>When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0).</div>	<div><ul style="list-style-type: none">• linkstate_id Network segment described by the LSA (dotted decimal notation). Value depends on the LSA type.<ul style="list-style-type: none">— When the LSA describes a network, the <i>linkstate-id</i> argument is one of the following:<div><div>The network IP address, as in Type 3 summary link advertisements and in autonomous system external link advertisements.</div><div>A derived address obtained from the link state ID. Masking a network links the advertisement link state ID with the network subnet mask yielding the network IP address.</div></div>— When the LSA describes a router, the link state ID is the OSPFv2 router ID of the router.— When an autonomous system external advertisement (Type 5) describes a default route, its link state ID is set to the default destination (0.0.0.0).</div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1454.</div> <div>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1404; Arista User Manual v. 4.12.3 (7/17/13), at 1240; Arista User Manual, v. 4.11.1 (1/11/13), at 996; Arista User Manual v. 4.10.3 (10/22/12), at 825; Arista User Manual v. 4.9.3.2 (5/3/12), at 648; Arista User Manual v. 4.8.2 (11/18/11), at 483; Arista User Manual v. 4.7.3 (7/18/11), at 357; Arista User Manual v. 4.6.0 (12/22/2010), at 217.</div>
adv-router [ip-address]	(Optional) Displays all the LSAs of the specified router. If no IP address is included, the information is about the local router itself (in this case, the same as self-originate).					
link-state-id	<div>(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's LS type. It must be entered in the form of an IP address.</div> <div>When the link state advertisement is describing a network, the <i>link-state-id</i> can take one of two forms:</div> <div>The network's IP address (as in type 3 summary link advertisements and in autonomous system external link advertisements).</div> <div>A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.)</div> <div>When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID.</div> <div>When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0).</div>					

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Cisco XE 3.5 Effective date of registration: 11/24/2014	<div>area nssa translate</div> <p>To configure a not-so-stubby area (NSSA) and to configure the OSPF Forwarding Address Suppression in Translated Type-5 LSAs feature, use the <code>area nssa translate</code> command in router address family topology or router configuration mode. To remove the NSSA distinction from the area, use the <code>no</code> form of this command.</p> <pre>area nssa translate command area area-id nssa translate type7 [always] [suppress-fa] [default-information-originate [metric ospf-metric] [metric-type ospf-link-state-type] [nssa-only]] [no-ext-capability] [no-redistribution] [no-summary] no area area-id nssa translate type7 [always] [suppress-fa] [default-information-originate [metric ospf-metric] [metric-type ospf-link-state-type] [nssa-only]] [no-ext-capability] [no-redistribution] [no-summary]</pre> <table><tr><th>Syntax Description</th><td><code>area-id</code></td><td>Identifier for the stub area or NSSA. The identifier can be specified as either a decimal value or an IP address.</td></tr><tr><td></td><td><code>translate</code></td><td>Translates one type of link-state advertisement (LSA) to another type of LSA. This keyword takes effect only on an NSSA Area Border Router (ABR) or an NSSA Autonomous System Boundary Router (ASBR).</td></tr><tr><td></td><td><code>type7</code></td><td>(Required) Translates a Type-7 LSA to a Type-5 LSA. This keyword takes effect only on an NSSA ABR or an NSSA ASBR.</td></tr><tr><td></td><td><code>always</code></td><td>(Optional) Configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs. You can configure the <code>always</code> keyword only in router configuration mode, not in router address family topology configuration mode.</td></tr></table> <p>Cisco IOS IP Routing: OSPF Command Reference (2011), at 15</p>	Syntax Description	<code>area-id</code>	Identifier for the stub area or NSSA. The identifier can be specified as either a decimal value or an IP address.		<code>translate</code>	Translates one type of link-state advertisement (LSA) to another type of LSA. This keyword takes effect only on an NSSA Area Border Router (ABR) or an NSSA Autonomous System Boundary Router (ASBR).		<code>type7</code>	(Required) Translates a Type-7 LSA to a Type-5 LSA. This keyword takes effect only on an NSSA ABR or an NSSA ASBR.		<code>always</code>	(Optional) Configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs. You can configure the <code>always</code> keyword only in router configuration mode, not in router address family topology configuration mode.	<div>Chapter 26 Open Shortest Path First – Version 3</div> <div>OSPFv3 Commands</div> <div>area nssa translate type7 always (OSPFv3)</div> <p>The <code>area nssa translate type7 always</code> command translates Type-7 link-state advertisement (LSA) to Type-5 of LSAs.</p> <p>The <code>no area nssa translate type7 always</code> command removes the NSSA distinction from the area.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-OSPF3 Configuration</td></tr></table> <p>Command Syntax</p> <pre>area area_id nssa translate type7 always no area_id nssa translate type7 always default area_id nssa translate type7 always</pre> <p>Parameters</p> <ul style="list-style-type: none"><code>area_id</code> area number. <p>Valid formats: integer <1 to 4294967295> or dotted decimal <0.0.0.1 to 255.255.255.255> Area 0 (or 0.0.0.0) is not configurable; it is always <i>normal</i>. <i>Running-config</i> stores value in dotted decimal notation.</p> <p>Example</p> <ul style="list-style-type: none">This command configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs. <pre>switch(config)#ipv6 router ospf 3 switch(config-router-ospf3)#area 3 nssa translate type7 always switch(config-router-ospf3)#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1501.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1451; Arista User Manual v. 4.12.3 (7/17/13), at 1286; Arista User Manual, v. 4.11.1 (1/11/13), at 1036.</p>	Platform	all	Command Mode	Router-OSPF3 Configuration
	Syntax Description	<code>area-id</code>	Identifier for the stub area or NSSA. The identifier can be specified as either a decimal value or an IP address.															
		<code>translate</code>	Translates one type of link-state advertisement (LSA) to another type of LSA. This keyword takes effect only on an NSSA Area Border Router (ABR) or an NSSA Autonomous System Boundary Router (ASBR).															
	<code>type7</code>	(Required) Translates a Type-7 LSA to a Type-5 LSA. This keyword takes effect only on an NSSA ABR or an NSSA ASBR.																
	<code>always</code>	(Optional) Configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs. You can configure the <code>always</code> keyword only in router configuration mode, not in router address family topology configuration mode.																
Platform	all																	
Command Mode	Router-OSPF3 Configuration																	

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>timers basic (RIP)</p> <p>To adjust Routing Information Protocol (RIP) network timers, use the timers basic command in router configuration mode. To restore the default timers, use the no form of this command.</p> <p>timers basic <i>update invalid holddown flush</i></p> <p>no timers basic</p> <table border="1"> <tr> <td data-bbox="302 492 436 509">Syntax Description</td><td data-bbox="453 492 506 509"><i>update</i></td><td data-bbox="569 492 1140 532">Rate (in seconds) at which updates are sent. This is the fundamental timing parameter of the routing protocol. The default is 30 seconds.</td></tr> <tr> <td></td><td data-bbox="453 537 506 555"><i>invalid</i></td><td data-bbox="569 537 1140 634">Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when there is an absence of updates that refresh the route. The route then enters into a <i>holddown</i> state. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. The default is 90 seconds.</td></tr> <tr> <td></td><td data-bbox="453 639 506 657"><i>holddown</i></td><td data-bbox="569 639 1140 777">Interval (in seconds) during which routing information regarding better paths is suppressed. It should be at least three times the value of the <i>update</i> argument. A route enters into a <i>holddown</i> state when an update packet is received that indicates the route is unreachable. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. When holddown expires, routes advertised by other sources are accepted and the route is no longer inaccessible. The default is 180 seconds.</td></tr> <tr> <td></td><td data-bbox="453 782 506 800"><i>flush</i></td><td data-bbox="569 782 1140 880">Amount of time (in seconds) that must pass before the route is removed from the routing table; the interval specified should be greater than the value of the <i>invalid</i> argument. If it is less than this sum, the proper <i>holddown</i> interval cannot elapse, which results in a new route being accepted before the <i>holddown</i> interval expires. The default is 240 seconds.</td></tr> </table> <p>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IRP-811</p>	Syntax Description	<i>update</i>	Rate (in seconds) at which updates are sent. This is the fundamental timing parameter of the routing protocol. The default is 30 seconds.		<i>invalid</i>	Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when there is an absence of updates that refresh the route. The route then enters into a <i>holddown</i> state. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. The default is 90 seconds.		<i>holddown</i>	Interval (in seconds) during which routing information regarding better paths is suppressed. It should be at least three times the value of the <i>update</i> argument. A route enters into a <i>holddown</i> state when an update packet is received that indicates the route is unreachable. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. When holddown expires, routes advertised by other sources are accepted and the route is no longer inaccessible. The default is 180 seconds.		<i>flush</i>	Amount of time (in seconds) that must pass before the route is removed from the routing table; the interval specified should be greater than the value of the <i>invalid</i> argument. If it is less than this sum, the proper <i>holddown</i> interval cannot elapse, which results in a new route being accepted before the <i>holddown</i> interval expires. The default is 240 seconds.	<p>Chapter 28 Routing Information Protocol RIP Commands</p> <p>timers basic (RIP)</p> <p>The timers basic command configures the update interval, the expiration time, and the deletion time for routes received and sent through RIP. The command requires value declaration of all values.</p> <ul style="list-style-type: none"> The update time is the interval between unsolicited route responses. The default is 30 seconds. The expiration time is initialized when a route is established and any time an update is received for the route. If the specified period elapses from the last time the route update was received, then the route is marked as inaccessible and advertised as unreachable. However, the route forwards packets until the deletion time expires. The default value is 180 seconds. The deletion time is initialized when the expiration time has elapsed. On initialization of the deletion time, the route is no longer valid; however, it is retained in the routing table for a short time so that neighbors can be notified that the route has been dropped. Upon expiration of the deletion time, the route is removed from the routing table. The default is 120 seconds. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1671,</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1621; Arista User Manual v. 4.12.3 (7/17/13), at 1433; Arista User Manual, v. 4.11.1 (1/11/13), at 1179; Arista User Manual v. 4.10.3 (10/22/12), at 989; Arista User Manual v. 4.9.3.2 (5/3/12), at 748; Arista User Manual v. 4.8.2 at 570.</p>
Syntax Description	<i>update</i>	Rate (in seconds) at which updates are sent. This is the fundamental timing parameter of the routing protocol. The default is 30 seconds.												
	<i>invalid</i>	Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when there is an absence of updates that refresh the route. The route then enters into a <i>holddown</i> state. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. The default is 90 seconds.												
	<i>holddown</i>	Interval (in seconds) during which routing information regarding better paths is suppressed. It should be at least three times the value of the <i>update</i> argument. A route enters into a <i>holddown</i> state when an update packet is received that indicates the route is unreachable. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. When holddown expires, routes advertised by other sources are accepted and the route is no longer inaccessible. The default is 180 seconds.												
	<i>flush</i>	Amount of time (in seconds) that must pass before the route is removed from the routing table; the interval specified should be greater than the value of the <i>invalid</i> argument. If it is less than this sum, the proper <i>holddown</i> interval cannot elapse, which results in a new route being accepted before the <i>holddown</i> interval expires. The default is 240 seconds.												

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<p>Cisco IOS 15.2</p> <p>Effective date of registration:</p> <p>11/24/2014</p>	<p>SNMP notifications can be sent as traps or inform requests. Traps are unreliable because the receiver does not send acknowledgments when it receives traps. The sender cannot determine if the traps were received. However, an SNMP entity that receives an inform request acknowledges the message with an SNMP response protocol data unit (PDU). If the sender never receives the response, the inform request can be sent again. Thus, informs are more likely than traps to reach their intended destination.</p> <p>Compared to traps, informs consume more resources in the agent and in the network. Unlike a trap, which is discarded as soon as it is sent, an inform request must be held in memory until a response is received or the request times out. Also, traps are sent only once; an inform may be tried several times. The retries increase traffic and contribute to a higher overhead on the network.</p> <p>If you do not enter an snmp-server host command, no notifications are sent. To configure the router to send SNMP notifications, you must enter at least one snmp-server host command. If you enter the command with no optional keywords, all trap types are enabled for the host.</p> <p>To enable multiple hosts, you must issue a separate snmp-server host command for each host. You can specify multiple notification types in the command for each host.</p> <p>Cisco IOS IP Switching Command Reference (2011), v. 15.2, at 542</p>	<p>37.2.2 SNMP Notifications</p> <p>SNMP notifications are messages, sent by the agent, to inform managers of an event or a network condition. A <i>trap</i> is an unsolicited notification. An <i>inform</i> (or inform request) is a trap that includes a request for a confirmation that the message is received. Events that a notification can indicate include improper user authentication, restart, and connection losses.</p> <p>Traps are less reliable than informs because the receiver does not send any acknowledgment. However, traps are often preferred because informs consume more switch and network resources. A trap is sent only once and is discarded as soon as it is sent. An inform request remains in memory until a response is received or the request times out. An inform may be retried several times, increasing traffic and contributing to higher network overhead.</p> <p>Table 37-2 lists the SNMP traps that the switch supports.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1963.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1653; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration:</p> <p>8/12/2005</p>	<p>SNMP notifications can be sent as traps or inform requests. Traps are unreliable because the receiver does not send acknowledgments when it receives traps. The sender cannot determine if the traps were received. However, an SNMP entity that receives an inform request acknowledges the message with an SNMP response protocol data unit (PDU). If the sender never receives the response, the inform request can be sent again. Thus, informs are more likely than traps to reach their intended destination.</p> <p>Compared to traps, informs consume more resources in the agent and in the network. Unlike a trap, which is discarded as soon as it is sent, an inform request must be held in memory until a response is received or the request times out. Also, traps are sent only once; an inform may be tried several times. The retries increase traffic and contribute to a higher overhead on the network.</p> <p>Cisco IOS Network Management Command Reference (2005), at 522</p>	<p>37.2.2 SNMP Notifications</p> <p>SNMP notifications are messages, sent by the agent, to inform managers of an event or a network condition. A <i>trap</i> is an unsolicited notification. An <i>inform</i> (or inform request) is a trap that includes a request for a confirmation that the message is received. Events that a notification can indicate include improper user authentication, restart, and connection losses.</p> <p>Traps are less reliable than informs because the receiver does not send any acknowledgment. However, traps are often preferred because informs consume more switch and network resources. A trap is sent only once and is discarded as soon as it is sent. An inform request remains in memory until a response is received or the request times out. An inform may be retried several times, increasing traffic and contributing to higher network overhead.</p> <p>Table 37-2 lists the SNMP traps that the switch supports.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1963.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1653; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>

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<p>Cisco IOS XE 3.5</p> <p>Effective date of registration: 11/24/2014</p>	<p>Compared to traps, informs consume more resources in the agent and in the network. Unlike a trap, which is discarded as soon as it is sent, an inform request must be held in memory until a response is received or the request times out. Also, traps are sent only once; an inform may be tried several times. The retries increase traffic and contribute to a higher overhead on the network.</p> <p>Cisco IOS IP Switching Command Reference (2011), v. XE 3.5, at 544.</p>	<p>SNMP notifications are messages, sent by the agent, to inform managers of an event or a network condition. A <i>trap</i> is an unsolicited notification. An <i>inform</i> (or inform request) is a trap that includes a request for a confirmation that the message is received. Events that a notification can indicate include improper user authentication, restart, and connection losses.</p> <p>Traps are less reliable than informs because the receiver does not send any acknowledgment. However, traps are often preferred because informs consume more switch and network resources. A trap is sent only once and is discarded as soon as it is sent. An inform request remains in memory until a response is received or the request times out. An inform may be retried several times, increasing traffic and contributing to higher network overhead.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1963.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1653; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
<p>Cisco IOS XE 2.1</p> <p>Effective date of registration: 11/24/2014</p>	<p>Compared to traps, informs consume more resources in the agent and in the network. Unlike a trap, which is discarded as soon as it is sent, an inform request must be held in memory until a response is received or the request times out. Also, traps are sent only once; an inform may be tried several times. The retries increase traffic and contribute to a higher overhead on the network.</p> <p>Cisco IOS IP Switching Command Reference (2008), at ISW-344.</p>	<p>SNMP notifications are messages, sent by the agent, to inform managers of an event or a network condition. A <i>trap</i> is an unsolicited notification. An <i>inform</i> (or inform request) is a trap that includes a request for a confirmation that the message is received. Events that a notification can indicate include improper user authentication, restart, and connection losses.</p> <p>Traps are less reliable than informs because the receiver does not send any acknowledgment. However, traps are often preferred because informs consume more switch and network resources. A trap is sent only once and is discarded as soon as it is sent. An inform request remains in memory until a response is received or the request times out. An inform may be retried several times, increasing traffic and contributing to higher network overhead.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1963.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1653; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>

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Cisco IOS 15.2 Effective date of registration: 11/24/2014	<p><i>Table 22 show ip bgp neighbors paths Field Descriptions</i></p> <table><tr><th>Field</th><th>Description</th></tr><tr><td>Address</td><td>Internal address where the path is stored.</td></tr><tr><td>Refcount</td><td>Number of routes using that path.</td></tr></table> <table><tr><th>Field</th><th>Description</th></tr><tr><td>Metric</td><td>Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)</td></tr><tr><td>Path</td><td>Autonomous system path for that route, followed by the origin code for that route.</td></tr></table> <p>Cisco IOS Multiprotocol Label Switching Command Reference (2011), at 640-41.</p>	Field	Description	Address	Internal address where the path is stored.	Refcount	Number of routes using that path.	Field	Description	Metric	Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)	Path	Autonomous system path for that route, followed by the origin code for that route.	<p>show ip bgp paths</p> <p>The show ip bgp paths command displays all BGP paths in the database.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax show ip bgp paths [VRF_INSTANCE]</p> <p>Parameters</p> <ul style="list-style-type: none">VRF_INSTANCE specifies VRF instances.<ul style="list-style-type: none"><no parameter> displays routing table for context-active VRF.vrf vrf_name displays routing table for the specified VRF.vrf all displays routing table for all VRFs.vrf default displays routing table for default VRF. <p>Display Values</p> <ul style="list-style-type: none">Refcount: Number of routes using a listed path.Metric: The Multi Exit Discriminator (MED) metric for the path.Path: The autonomous system path for that route, followed by the origin code for that route. <p>The MED, also known as the external metric of a route, provides information to external neighbors about the preferred path into an AS with multiple entry points. Lower MED values are preferred.</p>
	Field	Description												
	Address	Internal address where the path is stored.												
Refcount	Number of routes using that path.													
Field	Description													
Metric	Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)													
Path	Autonomous system path for that route, followed by the origin code for that route.													
	<p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1638.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1588; Arista User Manual v. 4.12.3 (7/17/13), at 1405; Arista User Manual, v. 4.11.1 (1/11/13), at 1151; Arista User Manual v. 4.10.3 (10/22/12), at 962; Arista User Manual v. 4.9.3.2 (5/3/12), at 776; Arista User Manual v. 4.8.2 at 547; Arista User Manual v. 4.7.3 (7/18/11), at 401; Arista User Manual v. 4.6.0 (12/22/2010), at 249.</p>													

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<div>Cisco IOS XE 2.1</div> <div>Effective date of registration:</div> <div>11/24/2014</div>	<div>Table 28 show ip bgp neighbors paths Field Descriptions</div> <table><tr><th>Field</th><th>Description</th></tr><tr><td>Address</td><td>Internal address where the path is stored.</td></tr><tr><td>Refcount</td><td>Number of routes using that path.</td></tr><tr><td>Metric</td><td>Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)</td></tr><tr><td>Path</td><td>Autonomous system path for that route, followed by the origin code for that route.</td></tr></table> <div>Cisco IOS Multiprotocol Label Switching Command Reference (2008), at 475.</div>	Field	Description	Address	Internal address where the path is stored.	Refcount	Number of routes using that path.	Metric	Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)	Path	Autonomous system path for that route, followed by the origin code for that route.	<div>show ip bgp paths</div> <div>The show ip bgp paths command displays all BGP paths in the database.</div> <div>Platform all Command Mode EXEC</div> <div>Command Syntax</div> <div>show ip bgp paths [VRF_INSTANCE]</div> <div>Parameters</div> <div><ul style="list-style-type: none">VRF_INSTANCE specifies VRF instances.<ul style="list-style-type: none"><no parameter> displays routing table for context-active VRF.vrf vrf_name displays routing table for the specified VRF.vrf all displays routing table for all VRFs.vrf default displays routing table for default VRF.</div> <div>Display Values</div> <div><ul style="list-style-type: none">Refcount: Number of routes using a listed path.Metric: The Multi Exit Discriminator (MED) metric for the path.Path: The autonomous system path for that route, followed by the origin code for that route.</div> <div>The MED, also known as the external metric of a route, provides information to external neighbors about the preferred path into an AS with multiple entry points. Lower MED values are preferred.</div>
	Field	Description										
	Address	Internal address where the path is stored.										
	Refcount	Number of routes using that path.										
	Metric	Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)										
Path	Autonomous system path for that route, followed by the origin code for that route.											
		<div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1638.</div> <div>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1588; Arista User Manual v. 4.12.3 (7/17/13), at 1405; Arista User Manual, v. 4.11.1 (1/11/13), at 1151; Arista User Manual v. 4.10.3 (10/22/12), at 962; Arista User Manual v. 4.9.3.2 (5/3/12), at 776; Arista User Manual v. 4.8.2 at 547; Arista User Manual v. 4.7.3 (7/18/11), at 401; Arista User Manual v. 4.6.0 (12/22/2010), at 249</div>										

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<p>Cisco IOS 15.2</p> <p>Effective date of registration:</p> <p>11/24/2014</p>	<p>Usage Guidelines</p> <p>This command configures the HTTP server to request an X.509v3 certificate from the client in order to authenticate the client during the connection process.</p> <p>In the default connection and authentication process, the client requests a certificate from the HTTP server, but the server does not attempt to authenticate the client. Authenticating the client provides more security than server authentication by itself, but not all web clients may be configured for certificate authority (CA) authentication.</p> <p>Cisco IOS HTTP Services Configuration Guide (2011), at 49.</p>	<p>protocol https certificate (API Management)</p> <p>The protocol https certificate command configures the HTTP secure server to request an X.509 certificate from the client to configure the server certificate. The client (usually a web browser), in turn, has a public key that allows it to authenticate the certificate.</p> <p>The no protocol https certificate and default protocol https certificate commands restore default behavior by removing the protocol https certificate statement from <i>running-config</i>.</p> <p>Platform all Command Mode Mgmt-api Configuration</p> <p>Command Syntax</p> <pre>protocol https certificate no protocol https certificate default protocol https certificate</pre> <p>Related Commands</p> <ul style="list-style-type: none"> management api http-commands places the switch in Management-api configuration mode. <p>Examples</p> <ul style="list-style-type: none"> These commands configures the HTTP server to request an X.509 certificate from the client in order to authenticate the client during the connection process. <pre>switch(config)#management api http-commands switch(config-mgmt-api-http-cmds)#protocol https certificate switch(config-mgmt-api-http-cmds)#</pre> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 85.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 75.</p>

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<p>Cisco IOS 15.2</p> <p>Effective date of registration:</p> <p>11/24/2014</p>	<p>Usage Guidelines</p> <p>To configure a remote user, specify the IP address or port number for the remote SNMP agent of the device where the user resides. Also, before you configure remote users for a particular agent, configure the SNMP engine ID, using the <code>snmp-server engineID</code> command with the <code>remote</code> keyword. The remote agent's</p> <p>Cisco IOS SNMP Support Command Reference (2011), at 380</p>	<p>Configuring the Group</p> <p>An SNMP group is a table that maps SNMP users to SNMP views. The <code>snmp-server group</code> command configures a new SNMP group.</p> <p>Example</p> <ul style="list-style-type: none"> This command configures <code>normal_one</code> as an SNMPv3 group (authentication and encryption) that provides access to the <code>all-items</code> read view. <pre>switch(config)#snmp-server group normal_one v3 priv read all-items switch(config)#</pre> <p>Configuring the User</p> <p>An SNMP user is a member of an SNMP group. The <code>snmp-server user</code> command adds a new user to an SNMP group and configures that user's parameters. To configure a remote user, specify the IP address or port number of the device where the user's remote SNMP agent resides.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1966.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1894; Arista User Manual v. 4.12.3 (7/17/13), at 1656; Arista User Manual, v. 4.11.1 (1/11/13), at 1344; Arista User Manual v. 4.10.3 (10/22/12), at 1110; Arista User Manual v. 4.9.3.2 (5/3/12), at 865; Arista User Manual v. 4.8.2 (11/18/11), at 677; Arista User Manual v. 4.7.3 (7/18/11), at 533.</p>

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<div>Cisco IOS 15.2</div> <div>Effective date of registration:</div> <div>11/24/2014</div>	<div><div>Usage Guidelines</div><div>The <code>show snmp host</code> command displays details such as IP address of the Network Management System (NMS), notification type, SNMP version, and the port number of the NMS.</div><div>To configure these details, use the <code>snmp-server host</code> command.</div></div> <div><div>Command Examples</div><div>The following is sample output from the <code>show snmp host</code> command.</div><div>Router# <code>show snmp host</code> Notification host: 10.2.28.6 udp-port: 162 type: inform user: public security model: v2c traps: 00001000.00000000.00000000</div><div>The table below describes the significant fields shown in the display.</div></div> <div><div>Table 5</div><div>show snmp host Field Descriptions</div><table><tr><th>Field</th><th>Description</th></tr><tr><td>Notification host</td><td>Displays the IP address of the host for which the notification is generated.</td></tr><tr><td>udp-port</td><td>Displays the port number.</td></tr><tr><td>type</td><td>Displays the type of notification.</td></tr><tr><td>user</td><td>Displays the access type of the user for which the notification is generated.</td></tr><tr><td>security model</td><td>Displays the SNMP version used to send notifications.</td></tr><tr><td>traps</td><td>Displays details of the notification generated.</td></tr></table></div>	Field	Description	Notification host	Displays the IP address of the host for which the notification is generated.	udp-port	Displays the port number.	type	Displays the type of notification.	user	Displays the access type of the user for which the notification is generated.	security model	Displays the SNMP version used to send notifications.	traps	Displays details of the notification generated.	<div><div>SNMP Commands</div><div>Chapter 37 SNMP</div></div> <div><div>show snmp host</div><div>The <code>show snmp host</code> command displays the recipient details for Simple Network Management Protocol (SNMP) notification operations. Details that the command displays include IP address and port number of the Network Management System (NMS), notification type, and SNMP version.</div><div>Platform all Command Mode EXEC</div><div>Command Syntax</div><div>show snmp host</div><div>Field Descriptions</div><div><ul style="list-style-type: none">Notification host IP address of the host for which the notification is generated.udp-port port number.type notification type.user access type of the user for which the notification is generated.security model SNMP version used to send notifications.traps details of the notification generated.</div></div> <div><div>Arista User Manual v. 4.13.6F (4/14/2014), at 1908</div><div>See also Arista User Manual v.4.14.3F (Rev. 2) (10/2/2014), at 1980; Arista User Manual v. 4.12.3 (7/17/13), at 1670; Arista User Manual, v. 4.11.1 (1/11/13), at 1357; Arista User Manual v. 4.10.3 (10/22/12), at 1124; Arista User Manual v. 4.9.3.2 (5/3/12), at 880; Arista User Manual v. 4.8.2 (11/18/11), at 688; Arista User Manual v. 4.7.3 (7/18/11), at 544.</div></div>
	Field	Description														
	Notification host	Displays the IP address of the host for which the notification is generated.														
	udp-port	Displays the port number.														
	type	Displays the type of notification.														
user	Displays the access type of the user for which the notification is generated.															
security model	Displays the SNMP version used to send notifications.															
traps	Displays details of the notification generated.															
Cisco IOS SNMP Support Command Reference (July 2011), at 108–09																

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<p>Cisco IOS 15.2</p> <p>Effective date of registration:</p> <p>11/24/2014</p>	<p>show snmp view</p> <p>To display the family name, storage type, and status of a Simple Network Management Protocol (SNMP) configuration and associated MIB, use the show snmp view command in privileged EXEC mode.</p> <p>Cisco IOS SNMP Support Command Reference (2011), at 140</p>	<p>SNMP Commands Chapter 37 SNMP</p> <p>show snmp view</p> <p>The show snmp view command displays the family name, storage type, and status of a Simple Network Management Protocol (SNMP) configuration and the associated MIB. SNMP views are configured with the snmp-server view command.</p> <p>Platform all Command Mode EXEC</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1986.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1914; Arista User Manual v. 4.12.3 (7/17/13), at 1676; Arista User Manual, v. 4.11.1 (1/11/13), at 1361; Arista User Manual v. 4.10.3 (10/22/12), at 1128; Arista User Manual v. 4.9.3.2 (5/3/12), at 884; Arista User Manual v. 4.8.2 (11/18/11), at 692; Arista User Manual v. 4.7.3 (7/18/11), at 548.</p>
<p>Cisco IOS 15.2</p> <p>Effective date of registration:</p> <p>11/24/2014</p>	<p>Usage Guidelines This command provides counter information for SNMP operations. It also displays the chassis ID string defined with the snmp-server chassis-id global configuration command.</p> <p>Command Examples The following is sample output from the show snmp command:</p> <pre> Router# show snmp Chassis: 12161083 0 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 0 Number of requested variables 0 Number of altered variables 0 Get-request PDUs 0 Get-next PDUs 0 Set-request PDUs 0 Input queue packet drops (Maximum queue size 1000) 0 SNMP packets output 0 Too big errors (Maximum packet size 1500) 0 No such name errors 0 Bad values errors 0 General errors 0 Response PDUs 0 Trap PDUs SNMP logging: enabled </pre> <p>Cisco IOS SNMP Support Command Reference (2011), at 95-96</p>	<p>Configuring SNMP Chapter 37 SNMP</p> <pre> 8 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 8 Number of requested variables 0 Number of altered variables 4 Get-request PDUs 4 Get-next PDUs 0 Set-request PDUs 21 SNMP packets output 0 Too big errors 0 No such name errors 0 Bad value errors 0 General errors 8 Response PDUs 0 Trap PDUs SNMP logging: enabled Logging to taccon.162 SNMP agent enabled switch(config)# </pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1967-68.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1896; Arista User Manual v. 4.12.3 (7/17/13), at 1658; Arista User Manual, v. 4.11.1 (1/11/13), at 1345; Arista User Manual v. 4.10.3 (10/22/12), at 1091; Arista User Manual v. 4.9.3.2 (5/3/12), at 868; Arista User Manual v. 4.8.2 (11/18/11), at 678; Arista User Manual v. 4.7.3 (7/18/11), at 534.</p>

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<p>Cisco IOS 15.2</p> <p>Effective date of registration:</p> <p>11/24/2014</p>	<p>snmp-server engineID local</p> <p>snmp-server engineID local through snmp trap link-status</p> <p>and the local engine ID. The command line password is then destroyed, as required by RFC 2274. Because of this deletion, if the local value of engineID changes, the security digests of SNMPv3 users will be invalid, and the users will have to be reconfigured.</p> <p>Similar restrictions require the reconfiguration of community strings when the engine ID changes. A remote engine ID is required when an SNMPv3 inform is configured. The remote engine ID is used to compute the security digest for authenticating and encrypting packets sent to a user on the remote host</p> <p>Cisco IOS SNMP Support Command Reference (2011), at 324.</p>	<p>snmp-server engineID remote</p> <p>The snmp-server engineID remote command configures the name of a Simple Network Management Protocol (SNMP) engine located on a remote device. The switch generates a default engineID; use the show snmp engineID command to view the configured or default engineID.</p> <p>A remote engine ID is required when configuring an SNMPv3 inform to compute the security digest for authenticating and encrypting packets sent to users on the remote host. SNMPv3 authenticates users through security digests (MD5 or SHA) that are based on user passwords and the engine ID. Passwords entered on the CLI are similarly converted, then compared to the user's security digest to authenticate the user.</p> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 1920.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1682; Arista User Manual, v. 4.11.1 (1/11/13), at 1367; Arista User Manual v. 4.10.3 (10/22/12), at 1134; Arista User Manual v. 4.9.3.2 (5/3/12), at 890; Arista User Manual v. 4.8.2 (11/18/11), at 698; Arista User Manual v. 4.7.3 (7/18/11), at 554.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration:</p> <p>8/12/2005</p>	<p>aaa group server radius</p> <p>To group different RADIUS server hosts into distinct lists and distinct methods, enter the aaa group server radius command in global configuration mode. To remove a group server from the configuration list, enter the no form of this command.</p> <p>aaa group server radius group-name</p> <p>no aaa group server radius group-name</p> <p>Cisco IOS Security Command Reference, Release 12.4 (2005), at SEC-74.</p>	<p>aaa group server radius</p> <p>The aaa group server radius command enters the server-group-radius configuration mode for the specified group name. The command creates the specified group if it was not previously created. Commands are available to add servers to the group.</p> <p>A server group is a collection of servers that are associated with a single label. Subsequent authorization and authentication commands access all servers in a group by invoking the group name. Server group members must be previously configured with a radius-server host command.</p> <p>The no aaa group server radius and default aaa group server radius commands delete the specified server group from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>aaa group server radius group_name</p> <p>no aaa group server radius group_name</p> <p>default aaa group server radius group_name</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 224.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 217; Arista User Manual v. 4.12.3 (7/17/13), at 168; Arista User Manual, v. 4.11.1 (1/11/13), at 126; Arista User Manual v. 4.10.3 (10/22/12), at 118.</p>

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Cisco IOS 12.4 Effective date of registration: 8/12/2005	<p>aaa authentication dot1x</p> <p>To specify one or more authentication, authorization, and accounting (AAA) methods for use on interfaces running IEEE 802.1X, use the aaa authentication dot1x command in global configuration mode. To disable authentication, use the no form of this command</p> <p>Cisco IOS Security Command Reference, Release 12.4 (2005), at SEC-32.</p>	<p>11.3.1 Configuring an Authentication Method List for 802.1x</p> <p>To use 802.1x port security, specify an authentication method to be used to authenticate clients. The switch supports RADIUS authentication with 802.1x port security. To use RADIUS authentication with 802.1x port security, you create an authentication method list for 802.1x and specify RADIUS as an authentication method, then configure communication between the switch and RADIUS server.</p> <p>Example</p> <ul style="list-style-type: none">The aaa authentication dot1x command specifies one or more authentication, authorization, and accounting (AAA) methods for use on interfaces running IEEE 802.1X. The following example uses the aaa authentication dot1x command with RADIUS authentication. <pre>switch> enable switch# configure terminal switch(config)# aaa authentication dot1x default group radius</pre> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 551,</p>									
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<p>dot1x port-control</p> <p>To set an 802.1X port control value, use the dot1x port-control command in interface configuration mode. To disable the port-control value, use the no form of this command.</p> <pre>dot1x port-control {auto force-authorized force-unauthorized} no dot1x port-control {auto force-authorized force-unauthorized}</pre> <table><tr><th>Syntax Description</th><th>auto</th><td>Determines authentication status of the client PC by the authentication process. The port state will be set to AUTO.</td></tr><tr><td></td><th>force-authorized</th><td>Disables 802.1X on the interface and causes the port to change to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.</td></tr><tr><td></td><th>force-unauthorized</th><td>Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.</td></tr></table> <p>Cisco IOS Security Command Reference, Release 12.4 (2005), at SEC-457.</p>	Syntax Description	auto	Determines authentication status of the client PC by the authentication process. The port state will be set to AUTO.		force-authorized	Disables 802.1X on the interface and causes the port to change to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.		force-unauthorized	Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.	<p>Example</p> <ul style="list-style-type: none">This command configures Ethernet 1 to immediately commence functioning as authenticator ports. <pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x port-control auto switch(config-if-Et1)#</pre> <p>The dot1x port-control force-authorized command causes the port to transition to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client.</p> <p>Example</p> <ul style="list-style-type: none">This example of the command designates Ethernet 1 as an authenticator port that is to continue to forward packets. <pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x port-control force-authorized switch(config-if-Et1)#</pre> <p>Example</p> <ul style="list-style-type: none">The dot1x port-control force-unauthorized command places the specified ports in the state of unauthorized, denying any access requests from users of the ports. <pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x port-control force-unauthorized switch(config-if-Et1)#</pre> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 552,</p>
Syntax Description	auto	Determines authentication status of the client PC by the authentication process. The port state will be set to AUTO.									
	force-authorized	Disables 802.1X on the interface and causes the port to change to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.									
	force-unauthorized	Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.									

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Cisco IOS 15.2 Effective date of registration: 11/24/2014	<div>dot1x max-reauth-req</div> <div>To set the maximum number of times the authenticator sends an Extensible Authentication Protocol (EAP) request/identity frame (assuming that no response is received) to the client, use the dot1x max-reauth-req command in interface configuration mode. To set the maximum number of times to the default setting of 2, use the no form of this command.</div> <div>dot1x max-reauth-req number no dot1x max-reauth-req</div> <div>Cisco IOS Security Command Reference: Commands D to L (2011), at 164.</div>	11.3.5 <div>Setting the Maximum Number of Times the Authenticator Sends EAP Request</div> <div>The dot1x max-reauth-req command sets the maximum number of times that the switch restarts the authentication process before a port changes to the unauthorized state.</div> <div>Example</div> <div><ul style="list-style-type: none">These commands set the maximum number of times the authenticator sends an Extensible Authentication Protocol (EAP) request/identity frame to the client.<pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x max-reauth-req 4 switch(config-if-Et1)#</pre></div> <div>Arista User Manual v. 4.13.6F (4/14/2014), at 553,</div>													
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<div>dot1x pae</div> <div>To set the Port Access Entity (PAE) type, use the dot1x pae command in interface configuration mode. To disable the PAE type that was set, use the no form of this command.</div> <div>dot1x pae [supplicant authenticator both] no dot1x pae [supplicant authenticator both]</div> <table><tr><td>Syntax Description</td><td>supplicant</td><td>(Optional) The interface acts only as a supplicant and will not respond to messages that are meant for an authenticator.</td></tr><tr><td></td><td>authenticator</td><td>(Optional) The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.</td></tr><tr><td></td><td>both</td><td>(Optional) The interface behaves both as a supplicant and as an authenticator and thus will respond to all dot1x messages.</td></tr></table> <div>Cisco IOS Security Command Reference, Release 12.4 (2005), at SEC-456.</div>	Syntax Description	supplicant	(Optional) The interface acts only as a supplicant and will not respond to messages that are meant for an authenticator.		authenticator	(Optional) The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.		both	(Optional) The interface behaves both as a supplicant and as an authenticator and thus will respond to all dot1x messages.	<div>dot1x pae authenticator</div> <div>The dot1x pae authenticator command sets the Port Access Entity (PAE) type. The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.</div> <div>The no dot1x pae authenticator and default dot1x pae authenticator commands restore the switch default by deleting the corresponding dot1x pae authenticator command from running-config.</div> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Management Configuration</td></tr></table> <div>Arista User Manual v. 4.13.6F (4/14/2014), at 560.</div>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Management Configuration
Syntax Description	supplicant	(Optional) The interface acts only as a supplicant and will not respond to messages that are meant for an authenticator.													
	authenticator	(Optional) The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.													
	both	(Optional) The interface behaves both as a supplicant and as an authenticator and thus will respond to all dot1x messages.													
Platform	all														
Command Mode	Interface-Ethernet Configuration Interface-Management Configuration														

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Cisco IOS 12.4 Effective date of registration: 8/12/2005	<div><div>dot1x timeout (EtherSwitch)</div><div>To set the number of retry seconds between 802.1X authentication exchanges when an Ethernet switch network module is installed in the router, use the dot1x timeout command in global configuration mode. To return to the default setting, use the no form of this command.</div><div><div>dot1x timeout {quiet-period seconds re-authperiod seconds tx-period seconds}</div><div>no dot1x timeout {quiet-period seconds re-authperiod seconds tx-period seconds}</div></div><div><div>Syntax Description</div><div><div>quiet-period seconds</div><div>Specifies the time in seconds that the Ethernet switch network module remains in the quiet state following a failed authentication exchange with the client. The range is from 0 to 65535 seconds. The default is 60 seconds.</div></div></div><div>Cisco IOS Security Command Reference, Release 12.4 (2005), at SEC-466.</div></div>	<div><div>dot1x timeout quiet-period</div><div>The dot1x timeout quiet-period command sets the number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client. The range is 1 to 65535 seconds; the default is 60.</div><div>When the switch cannot authenticate the client, the switch remains idle for a set period of time and then tries again. You can provide a faster response time to the user by entering a number smaller than the default.</div><div>The no dot1x timeout quiet-period and default dot1x timeout quiet-period commands restore the default advertisement interval of 60 seconds by removing the corresponding dot1x timeout quiet-period command from <i>running-config</i>.</div><div><div>Platform</div><div>all</div><div>Command Mode</div><div>Interface-Ethernet Configuration Interface-Management Configuration</div></div><div>Arista User Manual v. 4.13.6F (4/14/2014), at 563,</div></div>
	Cisco IOS 12.4 Effective date of registration: 8/12/2005	<div><div>Usage Guidelines</div><div>The security passwords min-length command provides enhanced security access to the router by allowing you to specify a minimum password length, eliminating common passwords that are prevalent on most networks, such as “lab” and “cisco.” This command affects user passwords, enable passwords and secrets, and line passwords. After this command is enabled, any password that is less than the specified length will fail.</div></div> <div>Cisco IOS Security Command Reference, Release 12.4 (2005), at SEC-943.</div>

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Cisco IOS 15.2 Effective date of registration: 11/24/2014	<p>Command Examples This example shows the output from the <code>show port-security</code> command when you do not enter any options:</p> <pre>Router# show port-security</pre> <table><thead><tr><th>Secure Port</th><th>MaxSecureAddr</th><th>CurrentAddr</th><th>SecurityViolation</th><th>Security Action</th></tr><tr><th></th><th>(Count)</th><th>(Count)</th><th>(Count)</th><th></th></tr></thead><tbody><tr><td>Fa5/1</td><td>11</td><td>11</td><td>0</td><td>Shutdown</td></tr><tr><td>Fa5/5</td><td>15</td><td>5</td><td>0</td><td>Restrict</td></tr><tr><td>Fa5/11</td><td>5</td><td>4</td><td>0</td><td>Protect</td></tr></tbody></table> <p>-----</p> <p>Total Addresses in System: 21 Max Addresses limit in System: 128 Router#</p> <p>Cisco IOS Security Command Reference Commands S to Z (July 2011), at 692.</p>	Secure Port	MaxSecureAddr	CurrentAddr	SecurityViolation	Security Action		(Count)	(Count)	(Count)		Fa5/1	11	11	0	Shutdown	Fa5/5	15	5	0	Restrict	Fa5/11	5	4	0	Protect	<p>Example</p> <ul style="list-style-type: none">These commands enable MAC security on Ethernet interface 7, set the maximum number of assigned MAC addresses to 2, assigns two static MAC addresses to the interface, and clears the dynamic MAC addresses for the interface. <pre>switch(config)#interface ethernet 7 switch(config-if-Et7)#switchport port-security switch(config-if-Et7)#switchport port-security maximum 2 switch(config-if-Et7)#exit switch(config)#mac address-table static 0034.24c2.8f11 vlan 10 interface ethernet 7 switch(config)#mac address-table static 4464.842d.17ce vlan 10 interface ethernet 7 switch(config)#clear mac address-table dynamic interface ethernet 7 switch(config)#show port-security</pre> <table><thead><tr><th>Secure Port</th><th>MaxSecureAddr</th><th>CurrentAddr</th><th>SecurityViolation</th><th>Security Action</th></tr><tr><th></th><th>(Count)</th><th>(Count)</th><th>(Count)</th><th></th></tr></thead><tbody><tr><td>Et7</td><td>2</td><td>2</td><td>0</td><td>Shutdown</td></tr></tbody></table> <p>-----</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 632.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 624; Arista User Manual v. 4.12.3 (7/17/13), at 501; Arista User Manual, v. 4.11.1 (1/11/13), at 405-06; Arista User Manual v. 4.10.3 (10/22/12), at 336.</p>	Secure Port	MaxSecureAddr	CurrentAddr	SecurityViolation	Security Action		(Count)	(Count)	(Count)		Et7	2	2	0	Shutdown
	Secure Port	MaxSecureAddr	CurrentAddr	SecurityViolation	Security Action																																					
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<p>Cisco IOS XE 3.5</p> <p>Effective date of registration: 11/24/2014</p>	<p>Command Modes PTP clock configuration (config-ptp-clk)</p> <table border="1" data-bbox="306 358 1144 423"> <tr> <th data-bbox="306 358 449 380">Command History</th><th data-bbox="449 358 800 380">Release</th><th data-bbox="800 358 1144 380">Modification</th></tr> <tr> <td></td><td data-bbox="449 391 800 412">15.0(1)S</td><td data-bbox="800 391 1144 412">This command was introduced.</td></tr> </table> <p>Usage Guidelines Slave devices use the priority1 value when selecting a master clock. The priority1 value has precedence over the priority2 value.</p> <p>Cisco IOS Interface and Hardware Component Command Reference (2011), at 1018.</p>	Command History	Release	Modification		15.0(1)S	This command was introduced.	<p>ptp priority1</p> <p>The ptp priority1 command configures the priority1 value to use when advertising the clock. This value overrides the default criteria for best master clock selection. Lower values take precedence. The range is from 0 to 255. To remove PTP settings, use the no form of this command.</p> <p>Platform FM6000 Command Mode Global Configuration</p> <p>Command Syntax</p> <pre>ptp priority1 priority_rate no ptp priority1 default ptp priority1</pre> <p>Parameters</p> <ul style="list-style-type: none"> <i>priority_rate</i> The value to override the default criteria (clock quality, clock class, etc.) for best master clock selection. Lower values take precedence. Value ranges from 0 to 255. The default is 128. <p>Examples</p> <ul style="list-style-type: none"> This command configures the preference level for a clock. Slave devices use the priority1 value when selecting a master clock. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 589.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 318; Arista User Manual v. 4.12.3 (7/17/13), at 262; Arista User Manual, v. 4.11.1 (1/11/13), at 208.</p>
Command History	Release	Modification						
	15.0(1)S	This command was introduced.						

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>service sequence-numbers</p> <p>To enable visible sequence numbering of system logging messages, use the service sequence-numbers command in global configuration mode. To disable visible sequence numbering of logging messages, use the no form of this command.</p> <p>service sequence-numbers</p> <p>no service sequence-numbers</p> <p>Syntax Description This command has no arguments or keywords.</p> <p>Defaults Disabled.</p> <p>Command Modes Global configuration</p> <table border="1"> <thead> <tr> <th>Command History</th><th>Release</th><th>Modification</th></tr> </thead> <tbody> <tr> <td></td><td>12.0</td><td>This command was introduced.</td></tr> </tbody> </table> <p>Usage Guidelines Each system status messages logged in the system logging process have a sequence reference number applied. This command makes that number visible by displaying it with the message. The sequence number is displayed as the first part of the system status message. See the description of the logging commands for information on displaying logging messages.</p> <p>Cisco IOS Configuration Fundamentals Command Reference Release 12.4T (2005), at CF-472.</p>	Command History	Release	Modification		12.0	This command was introduced.	<p>service sequence-numbers</p> <p>The service sequence-numbers command enables visible sequence numbering of system logging messages. Each system status messages logged in the system logging process have a sequence reference number applied. This command makes that number visible by displaying it with the message.</p> <p>The no service sequence-numbers and default service sequence-numbers commands disable visible sequence numbering of system logging messages by removing the service sequence-numbers command from <i>running-config</i>.</p> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 380.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 322; Arista User Manual, v. 4.11.1 (1/11/13), at 268.</p>
Command History	Release	Modification						
	12.0	This command was introduced.						

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Cisco IOS 15.1 Effective date of registration: 11/28/2014	<p>Usage Guidelines</p> <p>The command history function provides a record of EXEC commands that you have entered. This function is particularly useful for recalling long or complex commands or entries, including access lists. To change the number of command lines that the system will record in its history buffer, use the history size line configuration command.</p> <p>The history command enables the history function with the last buffer size specified or, if there was not a prior setting, with the default of ten lines. The no history command disables the history function.</p> <p>The show history EXEC command will list the commands you have entered, but you can also use your keyboard to display individual commands. Table 34 lists the keys you can use to recall commands from the command history buffer.</p> <p>Table 34 History Keys</p> <table><tr><th>Key(s)</th><th>Functions</th></tr><tr><td>Ctrl-P or Up Arrow¹</td><td>Recalls commands in the history buffer in a backward sequence, beginning with the most recent command. Repeat the key sequence to recall successively older commands.</td></tr><tr><td>Ctrl-N or Down Arrow¹</td><td>Returns to more recent commands in the history buffer after recalling commands with Ctrl-P or the Up Arrow. Repeat the key sequence to recall successively more recent commands.</td></tr></table> <p><small>1. The arrow keys function only with ANSI-compatible terminals.</small></p> <p>Cisco IOS Configuration Fundamentals Command Reference (2010), at CF-237.</p>	Key(s)	Functions	Ctrl-P or Up Arrow ¹	Recalls commands in the history buffer in a backward sequence, beginning with the most recent command. Repeat the key sequence to recall successively older commands.	Ctrl-N or Down Arrow ¹	Returns to more recent commands in the history buffer after recalling commands with Ctrl-P or the Up Arrow. Repeat the key sequence to recall successively more recent commands.	<p>3.2.4 History Substitution Keystrokes</p> <p>The history buffer retains the last 20 entered commands. History substitution keystrokes that access previously entered commands include:</p> <ul style="list-style-type: none">Ctrl-P or the Up Arrow key: Recalls history buffer commands, beginning with the most recent command. Repeat the key sequence to recall older commands.Ctrl-N or the Down Arrow key: Returns to more recent commands after using the Ctrl-P or the Up Arrow. Repeat the key sequence to recall more recent commands. <p>The show history command in Privileged EXEC mode displays the history buffer contents.</p> <pre>switch#show history en config exit show history</pre> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 103.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 93; Arista User Manual, v. 4.11.1 (1/11/13), at 63; Arista User Manual v. 4.10.3 (10/22/12), at 55; Arista User Manual v. 4.9.3.2 (5/3/12), at 51; Arista User Manual v. 4.8.2 (11/18/11), at 47; Arista User Manual v. 4.7.3 (7/18/11), at 44-45; Arista User Manual v. 4.6.0 (12/22/2010), at 38-39</p>												
Key(s)	Functions																			
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Cisco IOS 15.1 Effective date of registration: 11/28/2014	<table><tr><td>Left Arrow¹ or Ctrl-B</td><td>Back character</td><td>Moves the cursor one character to the left. When you enter a command that extends beyond a single line, you can press the Left Arrow or Ctrl-B keys repeatedly to scroll back toward the system prompt and verify the beginning of the command entry.</td></tr><tr><td>Right Arrow¹ or Ctrl-F</td><td>Forward character</td><td>Moves the cursor one character to the right.</td></tr><tr><td>Esc, B</td><td>Back word</td><td>Moves the cursor back one word.</td></tr><tr><td>Esc, F</td><td>Forward word</td><td>Moves the cursor forward one word.</td></tr><tr><td>Ctrl-A</td><td>Beginning of line</td><td>Moves the cursor to the beginning of the line.</td></tr><tr><td>Ctrl-E</td><td>End of line</td><td>Moves the cursor to the end of the command line.</td></tr></table> <p>Cisco IOS Configuration Fundamentals Command Reference (2010), at CF-189.</p>	Left Arrow ¹ or Ctrl-B	Back character	Moves the cursor one character to the left. When you enter a command that extends beyond a single line, you can press the Left Arrow or Ctrl-B keys repeatedly to scroll back toward the system prompt and verify the beginning of the command entry.	Right Arrow ¹ or Ctrl-F	Forward character	Moves the cursor one character to the right.	Esc, B	Back word	Moves the cursor back one word.	Esc, F	Forward word	Moves the cursor forward one word.	Ctrl-A	Beginning of line	Moves the cursor to the beginning of the line.	Ctrl-E	End of line	Moves the cursor to the end of the command line.	<p>3.2.3 Cursor Movement Keystrokes</p> <p>EOS supports these cursor movement keystrokes:</p> <ul style="list-style-type: none">Ctrl-B or the Left Arrow key: Moves the cursor back one character.Ctrl-F or the Right Arrow key: Moves the cursor forward one character.Ctrl-A: Moves the cursor to the beginning of the command line.Ctrl-E: Moves the cursor to the end of the command line.Esc-B: Moves the cursor back one word.Esc-F: Moves the cursor forward one word. <p>Arista User Manual v. 4.13.6F (4/14/2014), at 102.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 92; Arista User Manual, v. 4.11.1 (1/11/13), at 62; Arista User Manual v. 4.10.3 (10/22/12), at 54; Arista User Manual v. 4.9.3.2 (5/3/12), at 50; Arista User Manual v. 4.8.2 (11/18/11), at 46; Arista User Manual v. 4.7.3 (7/18/11), at 44; Arista User Manual v. 4.6.0 (12/22/2010), at 38.</p>
Left Arrow ¹ or Ctrl-B	Back character	Moves the cursor one character to the left. When you enter a command that extends beyond a single line, you can press the Left Arrow or Ctrl-B keys repeatedly to scroll back toward the system prompt and verify the beginning of the command entry.																		
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Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<table><tr><th>Channel Mode</th><th>Description</th></tr><tr><td>passive</td><td>LACP mode that places a port into a passive negotiating state, in which the port responds to LACP packets that it receives but does not initiate LACP negotiation.</td></tr><tr><td>active</td><td>LACP mode that places a port into an active negotiating state, in which the port initiates negotiations with other ports by sending LACP packets.</td></tr><tr><td>on</td><td>All static port channels, that is, that are not running LACP, remain in this mode. If you attempt to change the channel mode to active or passive before enabling LACP, the device returns an error message. You enable LACP on each channel by configuring the interface in that channel for the channel mode as either active or passive. When an LACP attempts to negotiate with an interface in the on state, it does not receive any LACP packets and becomes an individual link with that interface; it does not join the LACP channel group. The default port-channel mode is on.</td></tr></table>	Channel Mode	Description	passive	LACP mode that places a port into a passive negotiating state, in which the port responds to LACP packets that it receives but does not initiate LACP negotiation.	active	LACP mode that places a port into an active negotiating state, in which the port initiates negotiations with other ports by sending LACP packets.	on	All static port channels, that is, that are not running LACP, remain in this mode. If you attempt to change the channel mode to active or passive before enabling LACP, the device returns an error message. You enable LACP on each channel by configuring the interface in that channel for the channel mode as either active or passive. When an LACP attempts to negotiate with an interface in the on state, it does not receive any LACP packets and becomes an individual link with that interface; it does not join the LACP channel group. The default port-channel mode is on.	<p>Parameters</p> <ul style="list-style-type: none"><i>number</i> specifies a channel group ID. Values range from 1 through 1000.<i>LACP_MODE</i> specifies the interface LACP mode. Values include:<ul style="list-style-type: none"><i>mode on</i> Configures interface as a static port channel, disabling LACP. The switch does not verify or negotiate port channel membership with other switches.<i>mode active</i> Enables LACP on the interface in active negotiating state. The port initiates negotiations with other ports by sending LACP packets.<i>mode passive</i> Enables LACP on the interface in a passive negotiating state. The port responds to LACP packets but cannot start LACP negotiations. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 469.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 403; Arista User Manual, v. 4.11.1 (1/11/13), at 336; Arista User Manual v. 4.10.3 (10/22/12), at 294; Arista User Manual v. 4.9.3.2 (5/3/12), at 278; Arista User Manual v. 4.8.2 (11/18/11), at 210; Arista User Manual v. 4.7.3 (7/18/11), at 424; Arista User Manual v. 4.6.0 (12/22/2010), at 271.</p>
	Channel Mode	Description								
passive	LACP mode that places a port into a passive negotiating state, in which the port responds to LACP packets that it receives but does not initiate LACP negotiation.									
active	LACP mode that places a port into an active negotiating state, in which the port initiates negotiations with other ports by sending LACP packets.									
on	All static port channels, that is, that are not running LACP, remain in this mode. If you attempt to change the channel mode to active or passive before enabling LACP, the device returns an error message. You enable LACP on each channel by configuring the interface in that channel for the channel mode as either active or passive. When an LACP attempts to negotiate with an interface in the on state, it does not receive any LACP packets and becomes an individual link with that interface; it does not join the LACP channel group. The default port-channel mode is on.									
Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<p>encapsulation dot1Q</p> <p>To enable IEEE 802.1Q encapsulation of traffic on a specified subinterface in a virtual LAN (VLAN), use the encapsulation dot1q command in subinterface configuration mode. To disable encapsulation, use the no form of this command.</p> <pre>encapsulation dot1Q vlan-id no encapsulation dot1Q vlan-id</pre> <p>Cisco NX-OS Interfaces Command Reference (2008), Release 4.0, at IF-8.</p>	<p>encapsulation dot1q vlan</p> <p>The encapsulation dot1q vlan command enables Layer 2 802.1Q encapsulation of traffic on a specified subinterface in a VLAN. The default VLAN for all interfaces is VLAN 1.</p> <p>The no encapsulation dot1q vlan and default encapsulation dot1q vlan commands restore the default VLAN to the configuration mode interface by removing the corresponding encapsulation dot1q vlan command from running-config.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 774.</p>								

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>switchport trunk native vlan</p> <p>To change the native VLAN ID when the interface is in trunking mode, use the switchport trunk native vlan command. To return the native VLAN ID to VLAN 1, use the no form of this command.</p> <p>switchport trunk native vlan <i>vlan-id</i></p> <p>no switchport trunk native vlan</p> <p>Cisco NX-OS Interfaces Command Reference (2008), Release 4.0, at IF-35.</p>	<p>switchport trunk native vlan</p> <p>The switchport trunk native vlan command specifies the trunk mode native VLAN for the configuration mode interface. Interfaces in trunk mode associate untagged frames with the native VLAN. Trunk mode interfaces can also be configured to drop untagged frames. The default native VLAN for all interfaces is VLAN 1.</p> <p>The no switchport trunk native vlan and default switchport trunk native vlan commands restore VLAN 1 as the trunk mode native VLAN to the configuration mode interface by removing the corresponding switchport trunk native vlan command from <i>running-config</i>.</p> <p>Platform all Command Mode Interface-Ethernet Configuration Interface-Port-channel Configuration</p> <p>Command Syntax</p> <p>switchport trunk native vlan <i>VLAN_ID</i> no switchport trunk native vlan default switchport trunk native vlan</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 800.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 647; Arista User Manual, v. 4.11.1 (1/11/13), at 500; Arista User Manual v. 4.10.3 (10/22/12), at 418; Arista User Manual v. 4.9.3.2 (5/3/12), at 357.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>— Rapid per VLAN Spanning Tree Plus (Rapid PVST+) and Multiple Spanning Tree (MST) have built-in compatibility mechanisms that allow them to interact properly with other versions of IEEE spanning tree or other regions. For example, a bridge running Rapid PVST+ can send 802.1D bridge protocol data units (BPDUs) on one of its ports when it is connected to a legacy bridge. An MST bridge can detect that a port is at the boundary of a region when it receives a legacy BPDU or an MST BPDU that is associated with a different region.</p> <p>These mechanisms are not always able to revert to the most efficient mode. For example, a Rapid PVST+ bridge that is designated for a legacy 802.1D bridge stays in 802.1D mode even after the legacy bridge has been removed from the link. Similarly, an MST port assumes that it is a boundary port when the bridges to which it is connected have joined the same region.</p> <p>To force the MST port to renegotiate with the neighbors, enter the clear spanning-tree detected-protocol command.</p> <p>If you enter the clear spanning-tree detected-protocol command with no arguments, the command is applied to every port of the device.</p> <p>This command does not require a license.</p> <p>Cisco NX-OS Layer 2 Switching Command Reference (2008), Release 4.0, at L2-5.</p>	<p>20.2.1.4 Version Interoperability</p> <p>A network can contain switches running different spanning tree versions. The common spanning tree (CST) is a single forwarding path the switch calculates for STP, RSTP, MSTP, and Rapid-PVST topologies in networks containing multiple spanning tree variations.</p> <p>In multi-instance topologies, the following instances correspond to the CST:</p> <ul style="list-style-type: none"> • Rapid-PVST VLAN 1 • MST IST (instance 0) <p>RSTP and MSTP are compatible with other spanning tree versions:</p> <ul style="list-style-type: none"> • An RSTP bridge sends 802.1D (original STP) BPDUs on ports connected to an STP bridge. • RSTP bridges operating in 802.1D mode remain in 802.1D mode even after all STP bridges are removed from their links. • An MST bridge can detect that a port is at a region boundary when it receives an STP BPDU or an MST BPDU from a different region. • MST ports assume they are boundary ports when the bridges to which they connect join the same region. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 953.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 831; Arista User Manual, v. 4.11.1 (1/11/13), at 649; Arista User Manual v. 4.10.3 (10/22/12), at 563; Arista User Manual v. 4.9.3.2 (5/3/12), at 483; Arista User Manual v. 4.8.2 (11/18/11), at 357; Arista User Manual v. 4.7.3 (7/18/11), at 231.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>When you enable this BPDU Guard command globally, the command applies only to spanning tree edge ports. See spanning-tree port type edge bpduguard default for more information on the global command for BPDU Guard. However, when you enable this feature on an <i>interface</i>, it applies to that interface <i>regardless</i> of the spanning tree port type.</p> <p>This command has three states:</p> <ul style="list-style-type: none"> • spanning-tree bpduguard enable—Unconditionally enables BPDU Guard on the interface. • spanning-tree bpduguard disable—Unconditionally disables BPDU Guard on the interface. • no spanning-tree bpduguard—Enables BPDU Guard on the interface if it is an operational spanning tree edge port and if the spanning-tree port type edge bpduguard default command is configured. <p>Cisco NX-OS Layer 2 Switching Command Reference (2008), Release 4.0, at L2-31.</p>	<p>The spanning-tree bpduguard interface configuration command controls BPDU guard on the configuration mode interface. This command takes precedence over the default setting configured by spanning-tree portfast bpduguard default.</p> <ul style="list-style-type: none"> • spanning-tree bpduguard enable enables BPDU guard on the interface. • spanning-tree bpduguard disable disables BPDU guard on the interface. • no spanning-tree bpduguard reverts the interface to the default BPDU guard setting. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 968.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 847; Arista User Manual, v. 4.11.1 (1/11/13), at 665; Arista User Manual v. 4.10.3 (10/22/12), at 579; Arista User Manual v. 4.9.3.2 (5/3/12), at 498; Arista User Manual v. 4.8.2 (11/18/11), at 372; Arista User Manual v. 4.7.3 (7/18/11), at 246.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>Understanding Loop Guard</p> <p>Loop Guard helps prevent bridging loops that could occur because of a unidirectional link failure on a point-to-point link.</p> <p>Cisco NX-OS Layer 2 Switching Configuration Guide (2008), Release 4.0, at 7-6.</p>	<p>20.3.3 Port Roles and Rapid Convergence</p> <p>Spanning Tree provides the following options for controlling port configuration and operation:</p> <ul style="list-style-type: none"> • PortFast: Allows ports to skip the listening and learning states before entering forwarding state. • Port Type and Link Type: Designates ports for rapid transitions to the forwarding state. • Root Guard: Prevents a port from becoming root port or blocked port. • Loop Guard: Prevents loops resulting from a unidirectional link failure on a point-to-point link. • Bridge Assurance: Prevents loops caused by unidirectional links or a malfunctioning switch. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 964.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 842; Arista User Manual, v. 4.11.1 (1/11/13), at 660; Arista User Manual v. 4.10.3 (10/22/12), at 574; Arista User Manual v. 4.9.3.2 (5/3/12), at 494; Arista User Manual v. 4.8.2 (11/18/11), at 368; Arista User Manual v. 4.7.3 (7/18/11), at 242.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>Bridge Assurance is enabled by default and can only be disabled globally. Also, Bridge Assurance can be enabled only on spanning tree network ports that are point-to-point links. Finally, both ends of the link must have Bridge Assurance enabled. If the device on one side of the link has Bridge Assurance enabled and the device on the other side either does not support Bridge Assurance or does not have this feature enabled, the connecting port is blocked.</p> <p>Cisco NX-OS Layer 2 Switching Configuration Guide (2008), Release 4.0, at 7-3.</p>	<p>spanning-tree bridge assurance</p> <p>The spanning-tree bridge assurance command enables bridge assurance on all ports with a port type of <i>network</i>. Bridge assurance protects against unidirectional link failure, other software failure, and devices that quit running a spanning tree algorithm.</p> <p>Bridge assurance is available only on spanning tree <i>network</i> ports on point-to-point links. Both ends of the link must have bridge assurance enabled. If the device on one side of the link has bridge assurance enabled and the device on the other side either does not support bridge assurance or does not have it enabled, the bridge assurance enabled port is blocked.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1002.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 880; Arista User Manual, v. 4.11.1 (1/11/13), at 698; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 531; Arista User Manual v. 4.8.2 (11/18/11), at 403; Arista User Manual v. 4.7.3 (7/18/11), at 252.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>A regular expression is entered as part of a command and is a pattern made up of symbols, letters, and numbers that represent an input string for matching (or sometimes not matching). Matching the string to the specified pattern is called pattern matching.</p> <p>Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at A-1.</p>	<p>3.2.6 Regular Expressions</p> <p>A regular expression is pattern of symbols, letters, and numbers that represent an input string for matching an input string entered as a CLI parameter. The switch uses regular expression pattern matching in several BGP commands.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 106.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 94; Arista User Manual, v. 4.11.1 (1/11/13), at 64; Arista User Manual v. 4.10.3 (10/22/12), at 56; Arista User Manual v. 4.9.3.2 (5/3/12), at 52; Arista User Manual v. 4.8.2 (11/18/11), at 48.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<table border="1"> <tr> <td data-bbox="310 280 506 337">\$</td><td data-bbox="506 280 856 337">Matches the character or null string at the end of an input string.</td><td data-bbox="856 280 1152 337">123\$ matches 0123, but not 1234</td></tr> <tr> <td data-bbox="310 337 506 443">*</td><td data-bbox="506 337 856 443">Matches zero or more sequences of the character preceding the asterisk. Also acts as a wildcard for matching any number of characters.</td><td data-bbox="856 337 1152 443">5* matches any occurrence of the number 5 including none</td></tr> <tr> <td data-bbox="310 443 506 500">+</td><td data-bbox="506 443 856 500">Matches one or more sequences of the character preceding the plus sign.</td><td data-bbox="856 443 1152 500">8+ requires there to be at least one number 8 in the string to be match</td></tr> <tr> <td data-bbox="310 500 506 557">() []</td><td data-bbox="506 500 856 557">Nest characters for matching. Separate endpoints of a range with a dash (-).</td><td data-bbox="856 500 1152 557">(17)* matches any number of the two-character string 17</td></tr> <tr> <td data-bbox="310 557 506 646"> </td><td data-bbox="506 557 856 646">Concatenates constructs. Matches one of the characters or character patterns on either side of the vertical bar.</td><td data-bbox="856 557 1152 646">A(BIC)D matches ABD and ACD, not AD, ABCD, ABB, or ACCD</td></tr> <tr> <td data-bbox="310 646 506 946">-</td><td data-bbox="506 646 856 946">Replaces a long regular expression list by matching a comma (,), left brace ({}), right brace ({}), the beginning of the input string, the end of the input string, or a space.</td><td data-bbox="856 646 1152 946"> <p>The characters _1300_ can match of the following strings:</p> <ul style="list-style-type: none"> • ^1300\$ • ^1300space • space1300 • {1300, • ,1300, • {1300} • ,1300, </td></tr> </table> <p>Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at A-2.</p>	\$	Matches the character or null string at the end of an input string.	123\$ matches 0123, but not 1234	*	Matches zero or more sequences of the character preceding the asterisk. Also acts as a wildcard for matching any number of characters.	5* matches any occurrence of the number 5 including none	+	Matches one or more sequences of the character preceding the plus sign.	8+ requires there to be at least one number 8 in the string to be match	() []	Nest characters for matching. Separate endpoints of a range with a dash (-).	(17)* matches any number of the two-character string 17		Concatenates constructs. Matches one of the characters or character patterns on either side of the vertical bar.	A(BIC)D matches ABD and ACD, not AD, ABCD, ABB, or ACCD	-	Replaces a long regular expression list by matching a comma (,), left brace ({}), right brace ({}), the beginning of the input string, the end of the input string, or a space.	<p>The characters _1300_ can match of the following strings:</p> <ul style="list-style-type: none"> • ^1300\$ • ^1300space • space1300 • {1300, • ,1300, • {1300} • ,1300, 	<p>^ (caret) matches the character or null string at the beginning of a string. <i>Example</i> ^read matches reader ^read does not match bread.</p> <p>* (asterisk) matches zero or more sequences of character preceding the asterisk. <i>Example</i> 12* matches 167, 1267, or 12267. It does not match 267.</p> <p>+ (plus sign) matches one or more sequences of character preceding the plus sign. <i>Example</i> 46+ matches 2467 or 24667. It does not match 247.</p> <p>\$ (dollar sign) dollar sign matches the character or null string at the end of an input string. <i>Example</i> read\$ matches bread read\$ but not reads</p> <p>[] (brackets) matches characters or a character range separated by a hyphen. <i>Example</i> [0137abcr-y] matches 0, 1, 3, v. It does not match 2, 9, m, z</p> <p>? (question mark) pattern matches zero or one instance. Entering Ctrl-V prior to the question mark prevents the CLI from interpreting ? as a help command. <i>Example</i> x1?x matches xv and x1x</p> <p> (pipe) pattern matches character patterns on either side of bar. <i>Example</i> B(E A)D matches BED and BAD. It does not match BD, BEAD, BEED, or EAD</p> <p>() (parenthesis) nests characters for matching. Endpoints of a range are separated with a dash (-). <i>Example</i> 6(45)+ matches 645454523. It does not match 6443 <i>Example</i> ([A-Za-z][0-9])+ matches C4 or x9</p> <p>_ (underscore) Pattern replaces a long regular expression list by matching a comma (,), the beginning of the input string, the end of the input string, or a space. <i>Example</i> _rxy_ matches any of the following:</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 106.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 94; Arista User Manual, v. 4.11.1 (1/11/13), at 64; Arista User Manual v. 4.10.3 (10/22/12), at 56; Arista User Manual v. 4.9.3.2 (5/3/12), at 52; Arista User Manual v. 4.8.2 (11/18/11), at 48.</p>
\$	Matches the character or null string at the end of an input string.	123\$ matches 0123, but not 1234																		
*	Matches zero or more sequences of the character preceding the asterisk. Also acts as a wildcard for matching any number of characters.	5* matches any occurrence of the number 5 including none																		
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	Concatenates constructs. Matches one of the characters or character patterns on either side of the vertical bar.	A(BIC)D matches ABD and ACD, not AD, ABCD, ABB, or ACCD																		
-	Replaces a long regular expression list by matching a comma (,), left brace ({}), right brace ({}), the beginning of the input string, the end of the input string, or a space.	<p>The characters _1300_ can match of the following strings:</p> <ul style="list-style-type: none"> • ^1300\$ • ^1300space • space1300 • {1300, • ,1300, • {1300} • ,1300, 																		

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Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<div>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it will match the earliest part first.</div> Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at A-3.	<div>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it matches the earliest part first.</div> Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 107. See also Arista User Manual v. 4.13.6F (4/14/2014), at 105; Arista User Manual v. 4.12.3 (7/17/13), at 95; Arista User Manual, v. 4.11.1 (1/11/13), at 65; Arista User Manual v. 4.10.3 (10/22/12), at 57; Arista User Manual v. 4.9.3.2 (5/3/12), at 53; Arista User Manual v. 4.8.2 (11/18/11), at 49.						
Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<div>max-metric router-lsa (OSPF)</div> <div>To configure the Open Shortest Path First (OSPF) protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their shortest path first (SPF) calculations, use the max-metric router-lsa command. To disable the advertisement of a maximum metric, use the no form of this command.</div> <div>max-metric router-lsa [on-startup [seconds wait-for bgp tag]]</div> <div>no max-metric router-lsa [on-startup [seconds wait-for bgp tag]]</div> Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at L3-272.	<div>max-metric router-lsa (OSPFv2)</div> <div>The max-metric router-lsa command allows the OSPF protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their SPF calculations.</div> <div>The no max-metric router-lsa and default max-metric router-lsa commands disable the advertisement of a maximum metric.</div> <div>Platform all</div> <div>Command Mode Router-OSPF Configuration</div> Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1439.						
Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<table><tr><th>Syntax</th><th>Description</th></tr><tr><td>on-startup seconds</td><td>(Optional) Configures the router to advertise a maximum metric at startup. (Optional) Maximum metric (in seconds) that is advertised for the specified time interval. The configurable range is from 5 to 86400 seconds. The default is 600 seconds.</td></tr><tr><td>wait-for bgp tag</td><td>(Optional) Advertises a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.</td></tr></table> Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at L3-272.	Syntax	Description	on-startup seconds	(Optional) Configures the router to advertise a maximum metric at startup. (Optional) Maximum metric (in seconds) that is advertised for the specified time interval. The configurable range is from 5 to 86400 seconds. The default is 600 seconds.	wait-for bgp tag	(Optional) Advertises a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.	<div>on-startup wait-for-bgp Configures the router to advertise a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.</div> <div>on-startup <5 to 86400> Sets the maximum metric temporarily after a reboot to originate router-LSAs with the max-metric value.</div> <div>wait-for-bgp or an on-start time value is not included in no and default commands.</div> Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1439.
Syntax	Description							
on-startup seconds	(Optional) Configures the router to advertise a maximum metric at startup. (Optional) Maximum metric (in seconds) that is advertised for the specified time interval. The configurable range is from 5 to 86400 seconds. The default is 600 seconds.							
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Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<p>The cluster-id command is used to assign a cluster ID to a route reflector when the cluster has one or more route reflectors. Multiple route reflectors are deployed in a cluster to increase redundancy and avoid a single point of failure. When multiple route reflectors are configured in a cluster, the same cluster ID is assigned to all route reflectors. This allows all route reflectors in the cluster to recognize updates from peers in the same cluster and reduces the number of updates that need to be stored in BGP routing tables.</p> <p>Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at L3-564.</p>	<p>When using route reflectors, an AS is divided into clusters. A cluster consists of one or more route reflectors and a group of clients to which they re-advertise route information. Multiple route reflectors can be configured in the same cluster to increase redundancy and avoid a single point of failure. Each route reflector has a cluster ID. If the cluster has a single route reflector, the cluster ID is its router ID. If a cluster has multiple route reflectors, a 4-byte cluster ID is assigned to all route reflectors in the cluster. All of them must be configured with the same cluster ID so that they can recognize updates from other route reflectors in the same cluster. The bgp cluster-id command configures the cluster ID in a cluster with multiple route reflectors.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1549.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1331; Arista User Manual, v. 4.11.1 (1/11/13), at 1081; Arista User Manual v. 4.10.3 (10/22/12), at 893; Arista User Manual v. 4.9.3.2 (5/3/12), at 665.</p>						
Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<p>timers basic</p> <p>To adjust the Routing Information Protocol (RIP) network timers, use the timers basic command in router address-family configuration mode. To restore the default timers, use the no form of this command.</p> <p>timers basic <i>update</i> <i>invalid</i> <i>holddown</i> <i>flush</i></p> <p>no timers basic</p> <table><tr><th>Syntax</th><th>Description</th></tr><tr><td><i>update</i></td><td>Rate (in seconds) at which updates are sent. The default is 30 seconds.</td></tr><tr><td><i>invalid</i></td><td>Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when no updates refresh the route. The route then enters into a holddown state where it is marked as inaccessible and advertised as unreachable. However, the route is still used to forward packets. The default is 180 seconds.</td></tr></table> <p>Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at L3-538.</p>	Syntax	Description	<i>update</i>	Rate (in seconds) at which updates are sent. The default is 30 seconds.	<i>invalid</i>	Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when no updates refresh the route. The route then enters into a holddown state where it is marked as inaccessible and advertised as unreachable. However, the route is still used to forward packets. The default is 180 seconds.	<p>timers basic (RIP)</p> <p>The timers basic command configures the update interval, the expiration time, and the deletion time for routes received and sent through RIP. The command requires value declaration of all values.</p> <ul style="list-style-type: none">The update time is the interval between unsolicited route responses. The default is 30 seconds.The expiration time is initialized when a route is established and any time an update is received for the route. If the specified period elapses from the last time the route update was received, then the route is marked as inaccessible and advertised as unreachable. However, the route forwards packets until the deletion time expires. The default value is 180 seconds. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1671.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1621; Arista User Manual v. 4.12.3 (7/17/13), at 1433; Arista User Manual, v. 4.11.1 (1/11/13), at 1179; Arista User Manual v. 4.10.3 (10/22/12), at 989; Arista User Manual v. 4.9.3.2 (5/3/12), at 748; Arista User Manual v. 4.8.2 (11/18/11), at 570.</p>
Syntax	Description							
<i>update</i>	Rate (in seconds) at which updates are sent. The default is 30 seconds.							
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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>isis hello-multiplier</p> <p>To specify the number of Intermediate System-to-Intermediate System (IS-IS) hello packets a neighbor must miss before the router should declare the adjacency as down, use the isis hello-multiplier command in interface configuration mode. To restore the default value, use the no form of this command.</p> <p>isis hello-multiplier <i>multiplier</i> {level-1 level-2}</p> <p>no isis hello-multiplier {level-1 level-2}</p> <p>Cisco NX-OS Unicast Routing Command Reference (2008), Release 4.0, at L3-224.</p>	<p>isis hello-multiplier</p> <p>The isis hello-multiplier command specifies the number of IS-IS hello packets a neighbor must miss before the device should declare the adjacency as down.</p> <p>Each hello packet contains a hold time. The hold time informs the receiving devices how long to wait without seeing another hello from the sending device before considering the sending device down. The isis hello-multiplier command is used to calculate the hold time announced in hello packets by multiplying this number with the configured isis hello-interval.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1685.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1447.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>Local Proxy ARP</p> <p>You can use local Proxy ARP to enable a device to respond to ARP requests for IP addresses within a subnet where normally no routing is required. When you enable local Proxy ARP, ARP responds to all ARP requests for IP addresses within the subnet and forwards all traffic between hosts in the subnet. Use this feature only on subnets where hosts are intentionally prevented from communicating directly by the configuration on the device to which they are connected.</p> <p>Cisco NX-OS Unicast Routing Configuration Guide (2008), Release 4.0, at 2-5.</p>	<p>ip local-proxy-arp</p> <p>The ip local-proxy-arp command enables local proxy ARP (Address Resolution Protocol) on the configuration mode interface. Local proxy ARP programs the switch to respond to ARP requests for IP addresses within a subnet where routing is not normally required. A typical local proxy arp application is supporting isolated private VLANs that communicate with each other by routing packets.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1276.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1231; Arista User Manual v. 4.12.3 (7/17/13), at 1073; Arista User Manual, v. 4.11.1 (1/11/13), at 856; Arista User Manual v. 4.10.3 (10/22/12), at 707.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>IS-IS Overview</p> <p>IS-IS sends a <i>hello packet</i> out every configured interface to discover IS-IS neighbor routers. The hello packet contains information, such as the authentication, area, and supported protocols, which the receiving interface uses to determine compatibility with the originating interface. Compatible interfaces form adjacencies, which update routing information in the link-state database through link-state update messages (LSPs). By default, the router sends a periodic LSP refresh every 10 minutes and the LSps remain in the link-state database for 20 minutes (the LSP lifetime). If the router does not receive an LSP refresh before the end of the LSP lifetime, the router deletes the LSP from the database. The LSP interval must be less than the LSP lifetime or the LSps time out before they are refreshed.</p> <p>IS-IS Areas</p> <p>You can design IS-IS networks as a single area that includes all routers in the network or as multiple areas that connect into a backbone or Level 2 area. Routers in a nonbackbone area are Level 1 routers which establish adjacencies within a local area (intra-area routing). Level 2 area routers establish adjacencies to other Level 2 routers and perform routing between Level 1 areas (inter-area routing). A router can have both Level 1 and Level 2 areas configured. These Level 1/Level 2 routers act as area border routers which route information from the local area to the Level 2 backbone area (see Figure 8-1).</p> <p>Within a Level 1 area, routers know how to reach all other routers in that area. Between areas, routers know how to reach the area border router to get to the Level 2 area. The Level 2 routers know how to reach other area border routers and other Level 2 routers. Level 1/Level 2 routers straddle the boundary between two areas, routing traffic to and from the Level 2 backbone area.</p> <p>Each IS-IS instance in Cisco NX-OS supports either a single Level 1 or Level 2 area, or one of each. By default, all IS-IS instances automatically support Level 1 and Level 2 routing.</p> <p>Cisco NX-OS Unicast Routing Configuration Guide, Release 4.0, at 8-2.</p>	<p>29.2 IS-IS Description</p> <p>IS-IS sends a hello packet out every configured interface to discover IS-IS neighbor routers. The hello packet contains information, which the receiving interface uses to determine compatibility with the originating interface. Compatible interfaces form adjacencies, which update routing information in the link-state database through link-state update messages (LSPs). If the router does not receive an LSP refresh before the end of the LSP lifetime, the device deletes the LSP from the database.</p> <p>Terms of IS-IS Routing Protocol</p> <p>The following terms are used when configuring IS-IS.</p> <ul style="list-style-type: none"> • NET and System ID – Each IS-IS instance has an associated network entity title (NET). The NET consists of the IS-IS system ID, which uniquely identifies the IS-IS instance in the area and the area ID. • Designated Intermediate System – IS-IS uses a Designated Intermediate System (DIS) in broadcast networks to prevent each device from forming unnecessary links with every other device on the broadcast network. IS-IS devices send LSps to the DIS, which manages all the link-state information for the broadcast network. You can configure the IS-IS priority that IS-IS uses to select the DIS in an area. • IS-IS Areas – You can design IS-IS networks as a single area that includes all routers in the network or as multiple areas that connect into a backbone or Level 2 area. Routers in a nonbackbone area are Level 1 routers that establish adjacencies within a local area (intra-area routing). Level 2 area routers establish adjacencies to other Level 2 routers and perform routing between Level 1 areas (inter-area routing). A router can have both Level 1 and Level 2 areas configured. • IS-IS Instances – Arista supports only one instance of the IS-IS protocol that run on the same node. • LSP – Link state packet (LSP) can switch link state information. LSps fall into two types: Level 1 LSps and Level 2 LSps. Level 2 devices transmit Level 2 LSps; Level-1 devices transmit Level 1 LSps; Level 1-2 devices transmit both Level 2 LSps and Level 1 LSps. • Hello packets – Hello packets, can establish and maintain neighbor relationships. • Overload Bit – IS-IS uses the overload bit to tell other devices not to use the local router to forward traffic but to continue routing traffic destined for that local router. Possible conditions for setting the overload bit the device is in a critical condition. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1674.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1436.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>PIM Register Messages</p> <p>PIM register messages are unicast to the RP by designated routers (DRs) that are directly connected to multicast sources. The PIM register message has the following functions:</p> <ul style="list-style-type: none"> • To notify the RP that a source is actively sending to a multicast group. • To deliver multicast packets sent by the source to the RP for delivery down the shared tree. <p>The DR continues to send PIM register messages to the RP until it receives a Register-Stop message from the RP. The RP sends a Register-Stop message in either of the following cases:</p> <ul style="list-style-type: none"> • The RP has no receivers for the multicast group being transmitted. • The RP has joined the SPT to the source but has not started receiving traffic from the source. <p>Cisco NX-OS Multicast Routing Configuration Guide (2008), Release 4.0, at 3-7.</p>	<p>Anycast-RP</p> <p>PIM Anycast-RP defines a single RP address that is configured on multiple routers. An anycast-RP set consists of the routers configured with the same anycast-RP address. Anycast-RP provides redundancy protection and load balancing. The anycast-RP set supports all multicast groups.</p> <p>PIM register messages are unicast to the RP by designated routers (DRs) that are directly connected to multicast sources. The switch sends these messages and join-prune messages to the anycast-RP set member specified in the anycast-RP command. In a typical configuration, one command is required for each member of the anycast-RP set.</p> <p>The PIM register message has the following functions:</p> <ul style="list-style-type: none"> • Notify the RP that a source is actively sending to a multicast group. • Deliver multicast packets sent by the source to the RP for delivery down the shared tree. <p>The DR continues sending PIM register messages to the RP until it receives a Register-Stop message from the RP. The RP sends a Register-Stop message in either of the following cases:</p> <ul style="list-style-type: none"> • The RP has no receivers for the multicast group being transmitted. • The RP has joined the SPT to the source but has not started receiving traffic from the source. <p>The <code>ip pim anycast-rp</code> command configures the switch as a member of an anycast-RP set and establishes a communication link with another member of the set.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1874.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1580; Arista User Manual, v. 4.11.1 (1/11/13), at 1274; Arista User Manual v. 4.10.3 (10/22/12), at 1005-06; Arista User Manual v. 4.9.3.2 (5/3/12), at 763-65; Arista User Manual v. 4.8.2 (11/18/11), at 639; Arista User Manual v. 4.7.3 (7/18/11), at 514.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>If the supplicant is successfully authenticated (receives an Accept frame from the authentication server), the port state changes to authorized, and all frames from the authenticated supplicant are allowed through the port. If the authentication fails, the port remains in the unauthorized state, but authentication can be retried. If the authentication server cannot be reached, the authenticator can retransmit the request. If no response is received from the server after the specified number of attempts, authentication fails, and the supplicant is not granted network access.</p> <p>Cisco DCNM Security Configuration Guide (2008), Release 4.0, at 6-5.</p>	<p>11.3.3 Designating Authenticator Ports</p> <p>You have to designate ports as authenticator ports before you can configure their settings. There are three <code>dot1x port-control</code> commands for designating authenticator ports. The command you use is determined by whether or not the switch is part of an active network.</p> <p>If the switch is not part of an active network or is not forwarding traffic, you can use the <code>dot1x port-control auto</code> command to designate the authenticator ports. This command designates ports such that they immediately begin to function as authenticator ports, blocking all traffic until supplicants log on to the RADIUS server.</p> <p>If the client is successfully authenticated, the port state changes to authorized, and all frames from the authenticated client are allowed through the port. If the authentication fails, the port remains in the unauthorized state, but authentication can be retried. If the authentication server cannot be reached, the switch can retransmit the request. If no response is received from the server after the specified number of attempts, authentication fails, and network access is not granted.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 558.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>Changing Global 802.1X Authentication Timers</p> <p>The following global 802.1X authentication timers are supported on the device:</p> <ul style="list-style-type: none"> Quiet-period timer—When the device cannot authenticate the supplicant, the device remains idle for a set period of time, and then tries again. The quiet-period timer value determines the idle period. An authentication failure might occur because the supplicant provided an invalid password. You can provide a faster response time to the user by entering a number smaller than the default. The default is 60 seconds. The range is from 1 to 65535. <p>Cisco DCNM Security Configuration Guide (2008), Release 4.0, at 6-14.</p>	<p>dot1x timeout quiet-period</p> <p>The <code>dot1x timeout quiet-period</code> command sets the number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client. The range is 1 to 65535 seconds; the default is 60.</p> <p>When the switch cannot authenticate the client, the switch remains idle for a set period of time and then tries again. You can provide a faster response time to the user by entering a number smaller than the default.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 569.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>Enabling Periodic Reauthentication for an Interface</p> <p>You can enable periodic 802.1X reauthentication on an interface and specify how often it occurs. If you do not specify a time period before enabling reauthentication, the number of seconds between reauthentication defaults to the global value.</p> <p>Cisco DCNM Security Configuration Guide (2008), Release 4.0, at 6-14</p>	<p>dot1x timeout reauth-period</p> <p>The <code>dot1x timeout reauth-period</code> command specifies the time interval for reauthentication of clients on an authenticator port. Re-authentication must be enabled on an authenticator port for the timer to work. If you do not specify a time period before enabling re-authentication, the number of seconds between re-authentication attempts is 3600.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 570.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>If the supplicant is successfully authenticated (receives an Accept frame from the authentication server), the port state changes to authorized, and all frames from the authenticated supplicant are allowed through the port. If the authentication fails, the port remains in the unauthorized state, but authentication can be retried. If the authentication server cannot be reached, the authenticator can retransmit the request. If no response is received from the server after the specified number of attempts, authentication fails, and the supplicant is not granted network access.</p> <p>Cisco NX-OS Security Configuration Guide (2008), Release 4.0, at 7-5.</p>	<p>11.3.3 Designating Authenticator Ports</p> <p>You have to designate ports as authenticator ports before you can configure their settings. There are three <code>dot1x port-control</code> commands for designating authenticator ports. The command you use is determined by whether or not the switch is part of an active network.</p> <p>If the switch is not part of an active network or is not forwarding traffic, you can use the <code>dot1x port-control auto</code> command to designate the authenticator ports. This command designates ports such that they immediately begin to function as authenticator ports, blocking all traffic until supplicants log on to the RADIUS server.</p> <p>If the client is successfully authenticated, the port state changes to authorized, and all frames from the authenticated client are allowed through the port. If the authentication fails, the port remains in the unauthorized state, but authentication can be retried. If the authentication server cannot be reached, the switch can retransmit the request. If no response is received from the server after the specified number of attempts, authentication fails, and network access is not granted.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 558.</p>

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Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<h3>Changing Global 802.1X Authentication Timers</h3> <p>The following global 802.1X authentication timers are supported on the NX-OS device:</p> <ul style="list-style-type: none">Quiet-period timer—When the NX-OS device cannot authenticate the supplicant, the NX-OS device remains idle for a set period of time, and then tries again. The quiet-period timer value determines the idle period. An authentication failure might occur because the supplicant provided an invalid password. You can provide a faster response time to the user by entering a number smaller than the default. The default is 60 seconds. The range is from 1 to 65535. <p>Cisco NX-OS Security Configuration Guide (2008), Release 4.0, at 7-18.</p>	<h3>dot1x timeout quiet-period</h3> <p>The <code>dot1x timeout quiet-period</code> command sets the number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client. The range is 1 to 65535 seconds; the default is 60.</p> <p>When the switch cannot authenticate the client, the switch remains idle for a set period of time and then tries again. You can provide a faster response time to the user by entering a number smaller than the default.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 569.</p>				
Cisco NX-OS 4.0 Effective Date of registration: 11/13/2014	<h3>aaa group server radius</h3> <p>To create a RADIUS server group and enter RADIUS server group configuration mode, use the <code>aaa group server radius</code> command. To delete a RADIUS server group, use the <code>no</code> form of this command.</p> <pre>aaa group server radius group-name no aaa group server radius group-name</pre> <p>Cisco NX-OS Security Command Reference (2008), Release 4.0, at 17.</p>	<h3>aaa group server radius</h3> <p>The <code>aaa group server radius</code> command enters the server-group-radius configuration mode for the specified group name. The command creates the specified group if it was not previously created. Commands are available to add servers to the group.</p> <p>A server group is a collection of servers that are associated with a single label. Subsequent authorization and authentication commands access all servers in a group by invoking the group name. Server group members must be previously configured with a <code>radius-server host</code> command.</p> <p>The <code>no aaa group server radius</code> and default <code>aaa group server radius</code> commands delete the specified server group from <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Global Configuration</td></tr></table> <p>Command Syntax</p> <pre>aaa group server radius group_name no aaa group server radius group_name default aaa group server radius group_name</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 224.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 217; Arista User Manual, v. 4.11.1 (1/11/13), at 126; Arista User Manual v. 4.12.3 (7/17/13), at 168; Arista User Manual v. 4.10.3 (10/22/12), at 118.</p>	Platform	all	Command Mode	Global Configuration
Platform	all					
Command Mode	Global Configuration					

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>Usage Guidelines The 802.1X quiet-period timeout is the number of seconds that the switch remains in the quiet state following a failed authentication exchange with a supplicant.</p> <p>You must use the feature <code>dot1x</code> command before you configure 802.1X.</p> <p>Cisco NX-OS Security Command Reference (2008), Release 4.0, at 119.</p>	<p>dot1x timeout quiet-period</p> <p>The <code>dot1x timeout quiet-period</code> command sets the number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client. The range is 1 to 65535 seconds; the default is 60.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 569.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>ip dhcp snooping information option</p> <p>To enable the insertion and removal of option-82 information for DHCP packets, use the <code>ip dhcp snooping information option</code> command. To disable the insertion and removal of option-82 information, use the <code>no</code> form of this command.</p> <p><code>ip dhcp snooping information option</code></p> <p><code>no ip dhcp snooping information option</code></p> <p>Cisco NX-OS Security Command Reference (2008), Release 4.0, at 196.</p>	<p>Command Syntax</p> <p><code>ip dhcp snooping information option</code></p> <p><code>no ip dhcp snooping information option</code></p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1270.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>SNMPv3 provides for both security models and security levels. A security model is an authentication strategy that is set up for a user and the role in which the user resides. A security level is the permitted level of security within a security model. A combination of a security model and a security level determines which security mechanism is employed when handling an SNMP packet.</p> <p>Cisco NX-OS System Management Configuration Guide (2008), Release 4.0, at 7-2,</p>	<p>SNMPv3 is a security model which defines an authentication strategy that is configured for a user and the group in which the user resides. A security level is the permitted level of security within the model. A combination of a security model and a security level determines the security mechanism employed to handle an SNMP packet.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1964.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1342; Arista User Manual v. 4.10.3 (10/22/12), at 1108; Arista User Manual v. 4.9.3.2 (5/3/12), at 864; Arista User Manual v. 4.8.2 (11/18/11), at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective Date of registration: 11/13/2014</p>	<p>SNMPv3 provides for both security models and security levels. A security model is an authentication strategy that is set up for a user and the role in which the user resides. A security level is the permitted level of security within a security model. A combination of a security model and a security level determines which security mechanism is employed when handling an SNMP packet.</p> <p>Cisco NX-OS System Management Configuration Guide (2010), Release 5.0, at 10-2.</p>	<p>SNMPv3 is a security model which defines an authentication strategy that is configured for a user and the group in which the user resides. A security level is the permitted level of security within the model. A combination of a security model and a security level determines the security mechanism employed to handle an SNMP packet.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1964.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1342; Arista User Manual v. 4.10.3 (10/22/12), at 1108; Arista User Manual v. 4.9.3.2 (5/3/12), at 864; Arista User Manual v. 4.8.2 (11/18/11), at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
<p>Cisco IOS XE 2.1</p> <p>Effective Date of registration: 11/24/2014</p>	<p>SNMPv3 provides for both security models and security levels. A security model is an authentication strategy that is set up for a user and the role in which the user resides. A security level is the permitted level of security within a security model. A combination of a security model and a security level determines which security mechanism is employed when handling an SNMP packet.</p> <p>Configuring SNMP Support (2008), at 17.</p>	<p>SNMPv3 is a security model which defines an authentication strategy that is configured for a user and the group in which the user resides. A security level is the permitted level of security within the model. A combination of a security model and a security level determines the security mechanism employed to handle an SNMP packet.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1964.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1342; Arista User Manual v. 4.10.3 (10/22/12), at 1108; Arista User Manual v. 4.9.3.2 (5/3/12), at 864; Arista User Manual v. 4.8.2 (11/18/11), at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>snmp-server enable traps atm pvc</p> <p>...</p> <p>Usage Guidelines SNMP notifications can be sent as traps or inform requests. This command enables both traps and inform requests for the specified notification types. ATM notifications are defined in the CISCO-IETF-ATM2-PVCTRAP-MIB.mib file, available from the Cisco FTP site at ftp://www.cisco.com/public/mibs/v2/.</p> <p>Cisco IOS Asynchronous Transfer Mode Command Reference (2013), at 526.</p>	<p>snmp-server enable traps</p> <p>The snmp-server enable traps command enables the transmission of Simple Network Management Protocol (SNMP) notifications as traps or inform requests. This command enables both traps and inform requests for the specified notification types. The snmp-server host command specifies the notification type (traps or informs). Sending notifications requires at least one snmp-server host command.</p> <p>The snmp-server enable traps and no snmp-server enable traps commands, without an MIB parameter, specifies the default notification trap generation setting for all MIBs. These commands, when specifying an MIB, controls notification generation for the specified MIB. The default snmp-server enable traps command resets notification generation to the default setting for the specified MIB.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1990.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1918; Arista User Manual v. 4.12.3 (7/17/13), at 1680; Arista User Manual, v. 4.11.1 (1/11/13), at 1365; Arista User Manual v. 4.10.3 (10/22/12), at 1132; Arista User Manual v. 4.9.3.2 (5/3/12), at 888; Arista User Manual v. 4.8.2 at 696; Arista User Manual v. 4.7.3 (7/18/11), at 552.</p>


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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<pre>Router# show interface cbr 6/0 CBR6/0 is up, line protocol is up Hardware is DCU MTU 0 bytes, BW 1544 Kbit, DLY 0 usec, rely 255/255, load 248/255 Encapsulation ET ATMCES_T1, loopback not set Last input 00:00:00, output 00:00:00, output hang never Last clearing of "show interface" counters never Queueing strategy: fifo Output queue 0/0, 0 drops; input queue 0/75, 0 drops 5 minute input rate 1507000 bits/sec, 3957 packets/sec 5 minute output rate 1507000 bits/sec, 3955 packets/sec 3025960 packets input, 142220120 bytes, 0 no buffer Received 0 broadcasts, 0 runs, 0 giants 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 3030067 packets output, 142413149 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output buffers swapped out</pre> <p>The table below describes the fields shown in the display.</p> <p>Cisco IOS Asynchronous Transfer Mode Command Reference (2013), at 460.</p>	<pre>switch#show interfaces ethernet 1 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff) MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 minutes input rate 301 bps (0.0% with framing), 0 packets/sec 5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec 2285370854005 packets input, 225028582832583 bytes Received 29769609741 broadcasts, 3073437605 multicast 113 runs, 1 giants 118 input errors, 117 CRC, 0 alignment, 18 symbol 27511409 PAUSE input 335031607678 packets output, 27845413138330 bytes Sent 14282316688 broadcasts, 54045824072 multicast 108 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 437.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>severity-level</div><div>(Optional) The number or name of the desired severity level at which messages should be logged. Messages at or numerically lower than the specified level are logged. Severity levels are as follows (enter the number or the keyword): [0 emergencies]—System is unusable [1 alerts]—Immediate action needed [2 critical]—Critical conditions [3 errors]—Error conditions [4 warnings]—Warning conditions [5 notifications]—Normal but significant conditions [6 informational]—Informational messages [7 debugging]—Debugging messages</div></div> <div>Cisco IOS Cisco Networking Services Command Reference (2013), at 91.</div>	<div><div><div>• CONDITION Specifies condition level. Options include: — <no parameter> Specifies default condition level. — severity <condition-level> Name of the severity level at which messages should be logged</div><div>Valid condition-level options include: * 0 or emergencies System is unusable * 1 or alerts Immediate action needed * 2 or critical Critical conditions * 3 or errors Error conditions * 4 or warnings Warning conditions * 5 or notifications Normal but significant conditions * 6 or informational Informational messages * 7 or debugging Debugging messages</div></div><div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 155.</div></div>						
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show debugging</td><td>Displays information about the types of debugging that are enabled.</td></tr><tr><td>show dot1x</td><td>Displays 802.1x statistics, administrative status, and operational status for the router or for the specified interface.</td></tr></table> <div>Cisco IOS Debug Command Reference – Commands A through D (2013), at 635.</div>	Command	Description	show debugging	Displays information about the types of debugging that are enabled.	show dot1x	Displays 802.1x statistics, administrative status, and operational status for the router or for the specified interface.	<div><div>show dot1x</div><div>The show dot1x command displays the 802.1x statistics, administrative status, and operational status for the specified interface.</div><div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 572.</div></div>
Command	Description							
show debugging	Displays information about the types of debugging that are enabled.							
show dot1x	Displays 802.1x statistics, administrative status, and operational status for the router or for the specified interface.							

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	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show ip igmp interface</td><td>Displays multicast-related information about an interface.</td></tr></table> <p>Cisco IOS Debug Command Reference – Commands I through L (2013), at 297.</p>	Command	Description	show ip igmp interface	Displays multicast-related information about an interface.	<div>show ip igmp interface</div> <div>The show ip igmp interface command displays multicast-related information about an interface.</div> <div><ul style="list-style-type: none">show ip igmp interface – displays all multicast information for all interfacesshow ip igmp interface <i>int-name</i> – displays multicast information for the specified interfaces.</div> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1850.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1558; Arista User Manual, v. 4.11.1 (1/11/13), at 1253; Arista User Manual v. 4.10.3 (10/22/12), at 1038; Arista User Manual v. 4.9.3.2 (5/3/12), at 796; Arista User Manual v. 4.8.2 (11/18/11), at 614; Arista User Manual v. 4.7.3 (7/18/11), at 491; Arista User Manual v. 4.6.0 (12/22/2010), at 337.</p>
Command	Description					
show ip igmp interface	Displays multicast-related information about an interface.					
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<pre>Router# show interfaces Ethernet0/0 is up, line protocol is up Hardware is AmdP2, address is aabb.cc03.6c00 (bia aabb.cc03.6c00) Internet address is 172.17.1.1/16 MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive set (10 sec) ARP type: ARPA, ARP Timeout 04:00:00 Last input never, output 00:00:06, output hang never Last clearing of "show interface" counters never Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue: 0/40 (size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 0 packets input, 0 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 input packets with dribble condition detected 11 packets output, 1648 bytes, 0 underruns 0 output errors, 0 collisions, 1 interface resets 0 babbles, 0 late collision, 0 deferred 0 lost carrier, 0 no carrier 0 output buffer failures, 0 output buffers swapped out</pre> <p>Cisco Configuration Fundamentals Configuration Guide, Cisco IOS Release 15M&T (2013), at 44.</p>	<pre>switch#show interfaces ethernet 1 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff) MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 minutes input rate 301 bps (0.0% with framing), 0 packets/sec 5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec 2285370854005 packets input, 225028582832583 bytes Received 29769609741 broadcasts, 3073437605 multicast 113 runts, 1 giants 118 input errors, 117 CRC, 0 alignment, 18 symbol 27511409 PAUSE input 335031607678 packets output, 27845413138330 bytes Sent 14282316688 broadcasts, 54045824072 multicast 108 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 437.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.</p>				

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>Use the <code>show interface interface-type interface-number</code> command to display the information and statistics for Ethernet 0 on R4.</p> <pre>R4> show interface ethernet 0 Ethernet0 is up, line protocol is up Hardware is Lance, address is 00e0.1eb8.eb0e (bia 00e0.1eb8.eb0e) The MAC address for Ethernet 0 on R4 is 00e0.1eb8.eb0e. The format of the client identifier for this interface is nullcisco-00e0.1eb8.eb0e-et0.</pre> <p>Cisco Configuration Fundamentals Configuration Guide, Cisco IOS Release 15M&T (2013), at 81.</p>	<p>This command assigns the MAC address of 001c.2804.17e1 to Ethernet interface 7, then displays interface parameters, including the assigned address.</p> <pre>switch(config)#interface ethernet 7 switch(config-if-Et7)#mac-address 001c.2804.17e1 switch(config-if-Et7)#show interface ethernet 7 Ethernet3 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2)</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 437.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.</p>								
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>show ip mfib</td><td>Displays the forwarding entries and interfaces in the IPv4 MFIB.</td></tr><tr><td>show ip mfib active</td><td>Displays information from the IPv4 MFIB about the rate at which active multicast sources are sending to multicast groups.</td></tr><tr><td>show ip mfib count</td><td>Displays a summary of traffic statistics from the IPv4 MFIB about multicast sources and groups.</td></tr></tbody></table> <p>Cisco IOS Multicast Command Reference (2013), at 17.</p>	Command	Description	show ip mfib	Displays the forwarding entries and interfaces in the IPv4 MFIB.	show ip mfib active	Displays information from the IPv4 MFIB about the rate at which active multicast sources are sending to multicast groups.	show ip mfib count	Displays a summary of traffic statistics from the IPv4 MFIB about multicast sources and groups.	<p>The <code>show ip mfib</code> command displays the forwarding entries and interfaces in the IPv4 MFIB</p> <ul style="list-style-type: none">• <code>show ip mfib</code> displays MFIB information for hardware forwarded routes.• <code>show ip mfib software</code> displays MFIB information for software forwarded routes. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1755.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1484; Arista User Manual, v. 4.11.1 (1/11/13), at 1186; Arista User Manual v. 4.10.3 (10/22/12), at 1020; Arista User Manual v. 4.9.3.2 (5/3/12), at 778; Arista User Manual v. 4.8.2 (11/18/11), at 597; Arista User Manual v. 4.7.3 (7/18/11), at 477; Arista User Manual v. 4.6.0 (12/22/2010), at 324.</p>
Command	Description									
show ip mfib	Displays the forwarding entries and interfaces in the IPv4 MFIB.									
show ip mfib active	Displays information from the IPv4 MFIB about the rate at which active multicast sources are sending to multicast groups.									
show ip mfib count	Displays a summary of traffic statistics from the IPv4 MFIB about multicast sources and groups.									

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>show ip igmp interface</p> <p>To display multicast-related information about an interface, use the show ip igmp interface command in user EXEC or privileged EXEC mode.</p> <p>show ip igmp [vrf vrf-name] interface [interface-type interface-number]</p> <p>If you omit the optional arguments, the show ip igmp interface command displays information about all interfaces.</p> <p>Cisco IOS Multicast Command Reference at 618 (2013)</p> <table><tr><td>show ip igmp interface</td><td>Displays multicast-related information about an interface.</td></tr></table>	show ip igmp interface	Displays multicast-related information about an interface.	<p>show ip igmp interface</p> <p>The show ip igmp interface command displays multicast-related information about an interface.</p> <ul style="list-style-type: none">• show ip igmp interface – displays all multicast information for all interfaces• show ip igmp interface int-name – displays multicast information for the specified interfaces. <p>When all arguments are omitted, the command displays information for all interfaces.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p>show ip igmp interface [INT_NAME]</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1850.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1558; Arista User Manual, v. 4.11.1 (1/11/13), at 1253; Arista User Manual v. 4.10.3 (10/22/12), at 1038; Arista User Manual v. 4.9.3.2 (5/3/12), at 796; Arista User Manual v. 4.8.2 (11/18/11), at 614; Arista User Manual v. 4.7.3 (7/18/11), at 491; Arista User Manual v. 4.6.0 (12/22/2010), at 337.</p>
	show ip igmp interface	Displays multicast-related information about an interface.		


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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>ip igmp query-interval</div> <div> Note We recommend that you do not change the default IGMP query interval.</div> <div>To configure the frequency at which the IGMP querier sends Internet Group Management Protocol (IGMP) host-query messages from an interface, use the ip igmp query-interval command in interface configuration mode. To restore the default IGMP query interval, use the no form of this command.</div> <div>ip igmp query-interval seconds no ip igmp query-interval</div> <div>Use the ip igmp query-interval command to configure the frequency at which the IGMP querier sends IGMP host-query messages from an interface. The IGMP querier sends query-host messages to discover which multicast groups have members on the attached networks of the router.</div> <div>Cisco IOS Multicast Command Reference (2013), at 118.</div>	<div>ip igmp query-interval</div> <div>The ip igmp query-interval command configures the frequency at which the configuration mode interface, as an IGMP querier, sends host-query messages.</div> <div>An IGMP querier sends query-host messages to discover the multicast groups that have members on networks attached to the interface. The switch implements a default query interval of 125 seconds.</div> <div>The no ip igmp query-interval and default ip igmp query-interval commands reset the IGMP query interval to the default value of 125 seconds by removing the ip igmp query-interval command from <i>running-config</i>.</div> <div><table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Port-Channel Configuration Interface-VLAN Configuration</td></tr></table></div> <div>Command Syntax<div>ip igmp query-interval period no ip igmp query-interval default ip igmp query-interval</div></div> <div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1802.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1522; Arista User Manual, v. 4.11.1 (1/11/13), at 1219; Arista User Manual v. 4.10.3 (10/22/12), at 1028; Arista User Manual v. 4.9.3.2 (5/3/12), at 786; Arista User Manual v. 4.8.2 (11/18/11), at 605; Arista User Manual v. 4.7.3 (7/18/11), at 485; Arista User Manual v. 4.6.0 (12/22/2010), at 331.</div>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Port-Channel Configuration Interface-VLAN Configuration
	Platform	all				
Command Mode	Interface-Ethernet Configuration Interface-Port-Channel Configuration Interface-VLAN Configuration					

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>ip msdp mesh-group</p> <p>To configure a Multicast Source Discovery Protocol (MSDP) peer to be a member of a mesh group, use the <code>ip msdp mesh-group</code> command in global configuration mode. To remove an MSDP peer from a mesh group, use the <code>no</code> form of this command.</p> <pre>ip msdp [vrf vrf-name] mesh-group mesh-name {peer-address peer-name} no ip msdp [vrf vrf-name] mesh-group mesh-name {peer-address peer-name}</pre> <p>Cisco IOS Multicast Command Reference (2013), at 225</p> <p>A mesh group is a group of MSDP speakers that have fully meshed MSDP connectivity among themselves. Source-Active (SA) messages received from a peer in a mesh group are not forwarded to other peers in the same mesh group.</p> <p>Cisco IOS Multicast Command Reference (2013), at 226.</p>	<p>ip msdp mesh-group</p> <p>The <code>ip msdp mesh-group</code> command configures the specified MSDP peer connection as an MSDP mesh group member. A peer can be assigned to multiple mesh groups. Multiple MSDP peers can be assigned to a common mesh group.</p> <p>An MSDP mesh group is a network of MSDP speakers where each speaker is directly connected to every other speaker. Source-Active (SA) messages that are received from a peer in a mesh group are not forwarded to other peers in that mesh group.</p> <p>The <code>no ip msdp mesh-group</code> and default <code>ip msdp mesh-group</code> commands delete the specified peer connection from a mesh group by remove the corresponding <code>ip msdp mesh-group</code> command from running-config. Commands that do not include a specific MSDP peer deletes all configured connections from the specified mesh group.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <pre>ip msdp mesh-group group_name peer_id no ip msdp mesh-group group_name [peer_id] default ip msdp mesh-group group_name [peer_id]</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1928.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1634; Arista User Manual, v. 4.11.1 (1/11/13), at 1325.</p>
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Use the <code>ip multicast multipath</code> command to enable load splitting of IP multicast traffic across multiple equal-cost paths.</p> <p>If two or more equal-cost paths from a source are available, unicast traffic will be load split across those paths. However, by default, multicast traffic is not load split across multiple equal-cost paths. In general, multicast traffic flows down the reverse path forwarding (RPF) neighbor. According to the Protocol Independent Multicast (PIM) specifications, this neighbor must have the highest IP address if more than one neighbor has the same metric.</p> <p>Configuring load splitting with the <code>ip multicast multipath</code> command causes the system to load split multicast traffic across multiple equal-cost paths based on source address using the S-hash algorithm. When the <code>ip multicast multipath</code> command is configured and multiple equal-cost paths exist, the path in which multicast traffic will travel is selected based on the source IP address. Multicast traffic from different sources will be load split across the different equal-cost paths. Load splitting will not occur across equal-cost paths for multicast traffic from the same source sent to different multicast groups.</p> <p>Cisco IOS Multicast Command Reference (2013), at 284.</p>	<p>Equal Cost Multipath Routing (ECMP) and Load Sharing</p> <p>Multiple routes that have identical destinations and administrative distances comprise an Equal Cost Multi-Path (ECMP) route. The switch attempts to spread traffic to all ECMP route paths equally.</p> <p>If two or more equal-cost paths from a source are available, unicast traffic is load split across those paths. By default, multicast traffic is not load split. Multicast traffic generally flows from the reverse path forwarding (RPF) neighbor and, according to Protocol Independent Multicast (PIM) specifications, the neighbor with the highest IP address has precedence when multiple neighbors have the same metric.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1231.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1191; Arista User Manual v. 4.12.3 (7/17/13), at 1042; Arista User Manual, v. 4.11.1 (1/11/13), at 398; Arista User Manual v. 4.10.3 (10/22/12), at 330.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Enabling PIM on an interface also enables Internet Group Management Protocol (IGMP) operation on that interface. An interface can be configured to be in dense mode, passive mode, sparse mode, or sparse-dense mode. The mode describes how the Cisco IOS software populates its multicast routing table and how the software forwards multicast packets that it receives from its directly connected LANs. Dense mode interfaces are always added to the table when the multicast routing table is populated. Sparse mode interfaces are added to the table only when periodic join messages are received from downstream routers, or there is a directly connected member on the interface.</p> <p>Cisco IOS Multicast Command Reference (2013), at 330.</p>	<p>Enabling IGMP</p> <p>Enabling PIM on an interface also enables IGMP on that interface. When the switch populates the multicast routing table, interfaces are added to the table only when periodic join messages are received from downstream routers, or when there is a directly connected member on the interface.</p> <p>By default, PIM and IGMP are disabled on an interface. The <code>ip pim sparse-mode</code> command enables PIM and IGMP on the configuration mode interface.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1778.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1726; Arista User Manual v. 4.12.3 (7/17/13), at 1504; Arista User Manual, v. 4.11.1 (1/11/13), at 1204; Arista User Manual v. 4.10.3 (10/22/12), at 998; Arista User Manual v. 4.9.3.2 (5/3/12), at 756; Arista User Manual v. 4.8.2 at 578; Arista User Manual v. 4.7.3 (7/18/11), at 458; Arista User Manual v. 4.6.0 (12/22/2010), at 308.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>ip pim sparse sg-expiry-timer</p> <p>To adjust the (S, G) expiry timer interval for Protocol Independent Multicast sparse mode (PIM-SM) (S, G) multicast routes (mroutes), use the ip pim sparse sg-expiry-timer command in global configuration mode. To restore the default setting with respect to this command, use the no form of this command.</p> <p>ip pim [vrf vrf-name] sparse sg-expiry-timer seconds [sg-list access-list] no ip pim [vrf vrf-name] sparse sg-expiry-timer</p> <p>Cisco IOS Multicast Command Reference (2013), at 405.</p> <p>Use the ip pim sparse sg-expiry-timer command to adjust the expiry timer interval for PIM-SM (S, G) mroute entries to a time value greater than the default expiry timer interval of 180 seconds. This command can be used to lock down the shortest-path tree (SPT) for intermittent sources in PIM-SM network environments, such as sources in trading floor environments that sporadically send financial data streams to multicast groups during trading floor hours.</p> <p>When a source stops sending traffic to a multicast group, the corresponding (S, G) mroute entry eventually times out and the (S, G) entry is removed. When the source resumes sending traffic to the group, the (S, G) entry is rebuilt. During the short time interval before the (S, G) entry is rebuilt, the traffic is forwarded on the (*, G) forwarding entry. There is a small window of time before the (S, G) entry is completely built in which packets may be dropped. The ip pim sparse sg-expiry-timer command can be used to maintain the (S, G) entry so that it will not be removed and the stream will not potentially suffer packet loss.</p> <p>Cisco IOS Multicast Command Reference(2013), at 406.</p>	<p>ip pim sparse-mode sg-expiry-timer</p> <p>The ip pim sparse-mode sg-expiry-timer command adjusts the (S, G) expiry timer interval for PIM-SM (S, G) multicast routes (mroutes). This command locks the shortest-path tree (SPT) for intermittent PIM-SM sources. The command does not apply to (*, G) mroutes.</p> <p>When a source stops sending traffic to a multicast group, the corresponding (S, G) mroute is removed upon timer expiry. When the source resumes sending traffic to the group, the (S, G) entry is rebuilt. Before the (S, G) entry is rebuilt, traffic is forwarded on the (*, G) forwarding entry. Packets may be dropped before the (S, G) entry is completely built. The ip pim sparse-mode sg-expiry-timer command maintains the (S, G) entry, avoiding its removal and preventing packet loss.</p> <p>The no ip pim sparse-mode sg-expiry-timer and default ip pim sparse-mode sg-expiry-timer commands restore the default setting of 210 seconds by deleting the ip pim sparse-mode sg-expiry-timer statement from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>ip pim sparse-mode sg-expiry-timer period no ip pim sparse-mode sg-expiry-timer default ip pim sparse-mode sg-expiry-timer</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1896.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1602; Arista User Manual, v. 4.11.1 (1/11/13), at 1297; Arista User Manual v. 4.10.3 (10/22/12), at 1091; Arista User Manual v. 4.9.3.2 (5/3/12), at 848; Arista User Manual v. 4.8.2 (11/18/11), at 646; Arista User Manual v. 4.7.3 (7/18/11), at 516; Arista User Manual v. 4.6.0 (12/22/2010), at 361.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>ip host</td><td>Defines a static host name-to-address mapping in the host cache.</td></tr><tr><td>mls rp ip multicast</td><td>Enables IP multicast MLS (hardware switching) on an external or internal router in conjunction with Layer 3 switching hardware for the Catalyst 5000 switch.</td></tr><tr><td>show ip mroute</td><td>Displays the contents of the IP multicast routing table.</td></tr></table> Cisco IOS Multicast Command Reference (2013), at 21.	Command	Description	ip host	Defines a static host name-to-address mapping in the host cache.	mls rp ip multicast	Enables IP multicast MLS (hardware switching) on an external or internal router in conjunction with Layer 3 switching hardware for the Catalyst 5000 switch.	show ip mroute	Displays the contents of the IP multicast routing table.	show ip mroute count The show ip mroute count command displays IP multicast routing table statistics, including number of packets, packets per second, average packet size, and bits per second. <div>The show ip mroute command displays the contents of the IP multicast routing table.</div> Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1773 See also Arista User Manual v. 4.12.3 (7/17/13), at 1500; Arista User Manual, v. 4.11.1 (1/11/13), at 1199; Arista User Manual v. 4.10.3 (10/22/12), at 1023; Arista User Manual v. 4.9.3.2 (5/3/12), at 781; Arista User Manual v. 4.8.2 (11/18/11), at 600; Arista User Manual v. 4.7.3 (7/18/11), at 479; Arista User Manual v. 4.6.0 (12/22/2010), at 326.
Command	Description									
ip host	Defines a static host name-to-address mapping in the host cache.									
mls rp ip multicast	Enables IP multicast MLS (hardware switching) on an external or internal router in conjunction with Layer 3 switching hardware for the Catalyst 5000 switch.									
show ip mroute	Displays the contents of the IP multicast routing table.									
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>show ip igmp snooping</div> <div>To display the Internet Group Management Protocol (IGMP) snooping configuration of a device, use the show ip igmp snooping command in user EXEC or privileged EXEC mode.</div> <div>show ip igmp snooping [groups [count] vlan vlan-id [ip-address] count]] mrouter [[vlan vlan-id]] [bd bd-id]] [querier] vlan vlan-id] bd bd-id]</div> Cisco IOS Multicast Command Reference at 625 (2013). The following is sample output from the show ip igmp snooping command: <div>Router# show ip igmp snooping Global IGMP Snooping configuration: ----- IGMP snooping : Enabled IGMPv3 snooping (minimal) : Enabled Report suppression : Enabled TCN solicit query : Disabled TCN flood query count : 2 Last Member Query Interval : 1000</div> IOS Multicast Command Reference (2013), at 625.	<div>IGMP Snooping Status</div> <div>The show ip igmp snooping command displays the Internet Group Management Protocol (IGMP) snooping configuration of a device.</div> Example <ul style="list-style-type: none">This command displays the switch's IGMP snooping configuration. <div>switch>show ip igmp snooping Global IGMP Snooping configuration: ----- IGMP snooping : Enabled Robustness variable : 2</div> Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1785. See also Arista User Manual v. 4.12.3 (7/17/13), at 1511; Arista User Manual, v. 4.11.1 (1/11/13), at 1255; Arista User Manual v. 4.10.3 (10/22/12), at 1066; Arista User Manual v. 4.9.3.2 (5/3/12), at 824; Arista User Manual v. 4.8.2 (11/18/11), at 630; Arista User Manual v. 4.7.3 (7/18/11), at 505; Arista User Manual v. 4.6.0 (12/22/2010), at 351.								

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>show ip igmp snooping mrouter</p> <p> Note The documentation for this command has been integrated into the documentation for the show ip igmp snooping command. Please see the show ip igmp snooping command for complete and up-to-date information about displaying information for dynamically learned and manually configured multicast router ports.</p> <p>To display information on dynamically learned and manually configured multicast router ports, use the show ip igmp snooping mrouter command in privileged EXEC mode.</p> <p>show ip igmp snooping mrouter {vlan <i>vlan-id</i> bd <i>bd-id</i>}</p> <table border="1"> <tr> <td data-bbox="302 561 428 578">Syntax Description</td><td data-bbox="449 561 772 594">vlan <i>vlan-id</i></td><td data-bbox="783 561 1106 594">Specifies a VLAN. Valid values are 1 to 1001.</td></tr> <tr> <td></td><td data-bbox="449 602 772 634">bd <i>bd-id</i></td><td data-bbox="783 602 1106 634">Specifies a bridge domain. Valid values are 1 to 16823.</td></tr> </table> <p>Cisco IOS Multicast Command Reference (2013), at 634.</p>	Syntax Description	vlan <i>vlan-id</i>	Specifies a VLAN. Valid values are 1 to 1001.		bd <i>bd-id</i>	Specifies a bridge domain. Valid values are 1 to 16823.	<p>show ip igmp snooping mrouter</p> <p>The show ip igmp snooping mrouter command displays information on dynamically learned and manually configured multicast router ports. Command provides options to include only specific VLANs.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p>show ip igmp snooping mrouter [VLAN_ID] [DATA]</p> <p>Parameters</p> <ul style="list-style-type: none"> VLAN_ID specifies VLAN for which command displays information. Options include: <ul style="list-style-type: none"> <no parameter> all VLANs. vlan <i>v_num</i> specified VLAN. DATA specifies the type of information displayed. Options include: <ul style="list-style-type: none"> <no parameter> displays VLAN number and port-list for each group. detail displays port-specific data for each group; includes transmission times and expiration. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1859</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1567; Arista User Manual, v. 4.11.1 (1/11/13), at 1262; Arista User Manual v. 4.10.3 (10/22/12), at 1073; Arista User Manual v. 4.9.3.2 (5/3/12), at 830; Arista User Manual v. 4.8.2 (11/18/11), at 636; Arista User Manual v. 4.7.3 (7/18/11), at 511.</p>
Syntax Description	vlan <i>vlan-id</i>	Specifies a VLAN. Valid values are 1 to 1001.						
	bd <i>bd-id</i>	Specifies a bridge domain. Valid values are 1 to 16823.						

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>show ip mfib</p> <p>To display the forwarding entries and interfaces in the IPv4 Multicast Forwarding Information Base (MFIB), use the show ip mfib command in user EXEC or privileged EXEC mode.</p> <p>show ip mfib [vrf {vrf-name *}] [all linkscope group-address/mask group-address [source-address] [source-address group-address]] [verbose]</p> <p>Cisco IOS Multicast Command Reference (2013) at 649.</p>	<p>show ip mfib</p> <p>The show ip mfib command displays the forwarding entries and interfaces in the IPv4 Multicast Forwarding Information Base (MFIB) for hardware forwarded routes. Parameters options are available to filter output by group address or group and source addresses</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p>show ip mfib [ROUTE]</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1770</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1497; Arista User Manual, v. 4.11.1 (1/11/13), at 1196; Arista User Manual v. 4.10.3 (10/22/12), at 1020; Arista User Manual v. 4.9.3.2 (5/3/12), at 778; Arista User Manual v. 4.8.2 (11/18/11), at 597; Arista User Manual v. 4.7.3 (7/18/11), at 477; Arista User Manual v. 4.6.0 (12/22/2010), at 324.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>snmp-server enable traps pim</p> <p>To enable Protocol Independent Multicast (PIM) Simple Network Management Protocol (SNMP) notifications, use the snmp-server enable traps pim command in global configuration mode. To disable PIM-specific SNMP notifications, use the no form of this command.</p> <p>snmp-server enable traps pim [neighbor-change rp-mapping-change invalid-pim-message] no snmp-server enable traps pim</p> <p>Cisco IOS Multicast Command Reference (2013), at 950.</p> <p>SNMP notifications can be sent as traps or inform requests. This command enables both traps and inform requests for the specified notification types. PIM notifications are defined in the CISCO-PIM-MIB.mib and PIM-MIB.mib files, available from Cisco.com at http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.</p> <p>Cisco IOS Multicast Command Reference (2013), at 951.</p>	<p>snmp-server enable traps</p> <p>The snmp-server enable traps command enables the transmission of Simple Network Management Protocol (SNMP) notifications as traps or inform requests. This command enables both traps and inform requests for the specified notification types. The snmp-server host command specifies the notification type (traps or informs). Sending notifications requires at least one snmp-server host command.</p> <p>The snmp-server enable traps and no snmp-server enable traps commands, without an MIB parameter, specifies the default notification trap generation setting for all MIBs. These commands, when specifying an MIB, controls notification generation for the specified MIB. The default snmp-server enable traps command resets notification generation to the default setting for the specified MIB.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>snmp-server enable traps [trap_type] no snmp-server enable traps [trap_type] default snmp-server enable traps [trap_type]</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1990.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1918; Arista User Manual v. 4.12.3 (7/17/13), at 1680; Arista User Manual, v. 4.11.1 (1/11/13), at 1365; Arista User Manual v. 4.10.3 (10/22/12), at 1132; Arista User Manual v. 4.9.3.2 (5/3/12), at 888; Arista User Manual v. 4.8.2 at 696; Arista User Manual v. 4.7.3 (7/18/11), at 552.</p>


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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>lacp port-priority</p> <p>To set the priority for a physical interface, use the lacp port-priority command in interface configuration mode. To return to the default setting, use the no form of this command.</p> <p>lacp port-priority priority</p> <p>no lacp port-priority</p> <p>Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 690.</p> <p>You may assign a port priority to each port on a device running Link Aggregation Control Protocol (LACP). You can specify the port priority by using the lacp port-priority command at the command-line interface (CLI) or use the default port priority (32768) that is carried as part of the LACP protocol data unit (PDU) exchanged with the partner. Port priority is used to decide which ports should be put in standby mode when a hardware limitation or the lacp max-bundle command configuration prevents all compatible ports from aggregating. Priority is supported only on port channels with LACP-enabled physical interfaces.</p> <p>Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 691.</p>	<p>Configuring Port Priority</p> <p>LACP port priority determines the port that is active in a LAG in fallback mode. Numerically lower values have higher priority. Priority is supported on port channels with LACP-enabled physical interfaces.</p> <p>The lacp port-priority command sets the aggregating port priority for the configuration mode interface.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 461.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 395; Arista User Manual, v. 4.11.1 (1/11/13), at 333; Arista User Manual v. 4.10.3 (10/22/12), at 291; Arista User Manual v. 4.9.3.2 (5/3/12), at 275; Arista User Manual v. 4.8.2 (11/18/11), at 207.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>priority1</div><div>To set a preference level for a Precision Time Protocol clock, use the <code>priority1</code> command in PTP clock configuration mode. To remove a <code>priority1</code> configuration, use the <code>no</code> form of this command.</div><div><code>priority1 priorityvalue</code> <code>no priority1 priorityvalue</code></div><div>...</div><div><div>Usage Guidelines</div><div>Slave devices use the <code>priority1</code> value when selecting a master clock. The <code>priority1</code> value has precedence over the <code>priority2</code> value.</div></div><div>Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 1003.</div></div>	<div><div>ptp priority1</div><div>The <code>ptp priority1</code> command configures the <code>priority1</code> value to use when advertising the clock. This value overrides the default criteria for best master clock selection. Lower values take precedence. The range is from 0 to 255. To remove PTP settings, use the <code>no</code> form of this command.</div><div><div>Platform</div><div>Arad, FM6000</div><div>Command Mode</div><div>Global Configuration</div></div><div><div>Command Syntax</div><div><code>ptp priority1 priority_rate</code> <code>no ptp priority1</code> <code>default ptp priority1</code></div></div><div><div>Parameters</div><div><ul style="list-style-type: none"><code>priority_rate</code> The value to override the default criteria (clock quality, clock class, etc.) for best master clock selection. Lower values take precedence. Value ranges from 0 to 255. The default is 128.</div></div><div><div>Examples</div><div><ul style="list-style-type: none">This command configures the preference level for a clock; slave devices use the <code>priority1</code> value when selecting a master clock.</div></div><div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 326.</div><div>See also Arista User Manual v. 4.13.6F (4/14/2014), at 318; Arista User Manual v. 4.12.3 (7/17/13), at 262; Arista User Manual, v. 4.11.1 (1/11/13), at 208.</div></div>						
	Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>link state track</td><td>Configures the link state tracking number.</td></tr><tr><td>link state group</td><td>Configures the link state group and interface, as either an upstream or downstream interface in the group.</td></tr></table> <div>Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 1950.</div>	Command	Description	link state track	Configures the link state tracking number.	link state group	Configures the link state group and interface, as either an upstream or downstream interface in the group.
Command	Description							
link state track	Configures the link state tracking number.							
link state group	Configures the link state group and interface, as either an upstream or downstream interface in the group.							


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<div>Copyright Registration Information</div> <div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><div>show interfaces transceiver</div><div>To display information about the optical transceivers that have digital optical monitoring (DOM) enabled, use the showinterfacestransceiver command in privileged EXEC mode.</div><div>Catalyst 6500 Series Switches and Cisco 7600 Series Routers</div><div>show interfaces [interface interface-number] transceiver [threshold violations properties] [detail module number]</div><div>Cisco 7200 VXR</div><div>show interfaces [interface interface-number] transceiver</div><div>Cisco ASR 901 Routers</div><div>show interfaces [interface interface-number] transceiver [threshold {table violations} detail supported-list]</div></div> <div>Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 1878.</div> <div><div>Examples</div><div>This example shows how to display transceiver information:</div><div><div>Router# show interfaces transceiver</div><div>If device is externally calibrated, only calibrated values are printed.</div><div>++ : high alarm, + : high warning, - : low warning, -- : low alarm.</div><div>NA or N/A: not applicable, Tx: transmit, Rx: receive.</div><div>mA: milliamperes, dBm: decibels (milliwatts).</div><table><thead><tr><th>Port</th><th>Temperature (Celsius)</th><th>Voltage (Volts)</th><th>Current (mA)</th><th>Optical Tx Power (dBm)</th><th>Optical Rx Power (dBm)</th></tr></thead><tbody><tr><td>Gi1/1</td><td>40.6</td><td>5.09</td><td>0.4</td><td>-25.2</td><td>N/A</td></tr><tr><td>Gi2/1</td><td>35.5</td><td>5.05</td><td>0.1</td><td>-29.2</td><td>N/A</td></tr><tr><td>Gi2/2</td><td>49.5</td><td>3.30</td><td>0.0</td><td>7.1</td><td>-16.7</td></tr></tbody></table></div></div>	Port	Temperature (Celsius)	Voltage (Volts)	Current (mA)	Optical Tx Power (dBm)	Optical Rx Power (dBm)	Gi1/1	40.6	5.09	0.4	-25.2	N/A	Gi2/1	35.5	5.05	0.1	-29.2	N/A	Gi2/2	49.5	3.30	0.0	7.1	-16.7	<div><div>show interfaces transceiver</div><div>The show interfaces transceiver command displays operational transceiver data for the specified interfaces.</div><div>Platform all</div><div>Command Mode EXEC</div><div>Command Syntax</div><div>show interfaces [INTERFACE] transceiver [DATA_FORMAT]</div><div>...</div><div><div>Examples</div><div><div>This command displays transceiver data on Ethernet interfaces 1 through 4.</div><div><div>switch>show interfaces ethernet 1-4 transceiver</div><div>If device is externally calibrated, only calibrated values are printed.</div><div>N/A: not applicable, Tx: transmit, Rx: receive.</div><div>mA: milliamperes, dBm: decibels (milliwatts).</div><table><thead><tr><th>Port</th><th>Temp (Celsius)</th><th>Voltage (Volts)</th><th>Bias Current (mA)</th><th>Optical Tx Power (dBm)</th><th>Optical Rx Power (dBm)</th><th>Last Update (Date Time)</th></tr></thead><tbody><tr><td>Eth1</td><td>34.17</td><td>3.30</td><td>6.75</td><td>-2.41</td><td>-2.83</td><td>2011-12-02 16:18:48</td></tr><tr><td>Eth2</td><td>35.08</td><td>3.30</td><td>6.75</td><td>-2.23</td><td>-2.06</td><td>2011-12-02 16:18:42</td></tr><tr><td>Eth3</td><td>36.72</td><td>3.30</td><td>7.20</td><td>-2.02</td><td>-2.14</td><td>2011-12-02 16:18:49</td></tr><tr><td>Eth4</td><td>35.91</td><td>3.30</td><td>6.92</td><td>-2.20</td><td>-2.23</td><td>2011-12-02 16:18:45</td></tr></tbody></table></div><div>switch></div></div></div></div> <div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 451.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 385; Arista User Manual, v. 4.11.1 (1/11/13), at 326; Arista User Manual v. 4.10.3 (10/22/12), at 284; Arista User Manual v. 4.9.3.2 (5/3/12), at 266.</div>	Port	Temp (Celsius)	Voltage (Volts)	Bias Current (mA)	Optical Tx Power (dBm)	Optical Rx Power (dBm)	Last Update (Date Time)	Eth1	34.17	3.30	6.75	-2.41	-2.83	2011-12-02 16:18:48	Eth2	35.08	3.30	6.75	-2.23	-2.06	2011-12-02 16:18:42	Eth3	36.72	3.30	7.20	-2.02	-2.14	2011-12-02 16:18:49	Eth4	35.91	3.30	6.92	-2.20	-2.23	2011-12-02 16:18:45
	Port	Temperature (Celsius)	Voltage (Volts)	Current (mA)	Optical Tx Power (dBm)	Optical Rx Power (dBm)																																																							
	Gi1/1	40.6	5.09	0.4	-25.2	N/A																																																							
	Gi2/1	35.5	5.05	0.1	-29.2	N/A																																																							
	Gi2/2	49.5	3.30	0.0	7.1	-16.7																																																							
Port	Temp (Celsius)	Voltage (Volts)	Bias Current (mA)	Optical Tx Power (dBm)	Optical Rx Power (dBm)	Last Update (Date Time)																																																							
Eth1	34.17	3.30	6.75	-2.41	-2.83	2011-12-02 16:18:48																																																							
Eth2	35.08	3.30	6.75	-2.23	-2.06	2011-12-02 16:18:42																																																							
Eth3	36.72	3.30	7.20	-2.02	-2.14	2011-12-02 16:18:49																																																							
Eth4	35.91	3.30	6.92	-2.20	-2.23	2011-12-02 16:18:45																																																							

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>aaa authentication dot1x</p> <p>To specify one or more authentication, authorization, and accounting (AAA) methods for use on interfaces running IEEE 802.1X, use the aaa authentication dot1x command in global configuration mode. To disable authentication, use the no form of this command</p> <p>aaa authentication dot1x {default listname} method1 [method2 ...] no aaa authentication dot1x {default listname} method1 [method2 ...]</p> <p>Cisco IOS Security Command Reference: Commands A to C (2013), at 54.</p>	<p>Example</p> <ul style="list-style-type: none">The aaa authentication dot1x command specifies one or more authentication, authorization, and accounting (AAA) methods for use on interfaces running IEEE 802.1X. The following example uses the aaa authentication dot1x command with RADIUS authentication. <pre>switch(config)# aaa authentication dot1x default group radius switch(config)#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 557.</p>				
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show dot1x (EtherSwitch)</td><td>Displays 802.1X statistics, administrative status, and operational status for the switch or for the specified interface.</td></tr></table> <p>Cisco IOS Security Command Reference: Commands A to C (2013), at 56.</p>	Command	Description	show dot1x (EtherSwitch)	Displays 802.1X statistics, administrative status, and operational status for the switch or for the specified interface.	<p>show dot1x</p> <p>The show dot1x command displays the 802.1x statistics, administrative status, and operational status for the specified interface.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 572.</p>
Command	Description					
show dot1x (EtherSwitch)	Displays 802.1X statistics, administrative status, and operational status for the switch or for the specified interface.					
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>Method lists are specific to the type of authorization being requested. AAA supports five different types of authorization:</p> <ul style="list-style-type: none">Commands --Applies to the EXEC mode commands a user issues. Command authorization attempts authorization for all EXEC mode commands, including global configuration commands, associated with a specific privilege level.EXEC --Applies to the attributes associated with a user EXEC terminal session. <p>Cisco IOS Security Command Reference: Commands A to C (2013), at 83.</p>	<p>The switch supports two types of accounting:</p> <ul style="list-style-type: none">EXEC: Provides information about user CLI sessions.Commands: Applies to the CLI commands a user issues. Command authorization attempts authorization for all commands, including configuration commands, associated with a specific privilege level. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 207.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 154; Arista User Manual, v. 4.11.1 (1/11/13), at 114; Arista User Manual v. 4.10.3 (10/22/12), at 106; Arista User Manual v. 4.9.3.2 (5/3/12), at 93; Arista User Manual v. 4.8.2 (11/18/11), at 87; Arista User Manual v. 4.7.3 (7/18/11), at 73.</p>				

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><td>auto</td><td>Enables port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.</td></tr><tr><td>force-authorized</td><td>Disables IEEE 802.1X on the interface and causes the port to change to the authorized state without requiring any authentication exchange. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.</td></tr><tr><td>force-unauthorized</td><td>Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.</td></tr></table>	auto	Enables port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.	force-authorized	Disables IEEE 802.1X on the interface and causes the port to change to the authorized state without requiring any authentication exchange. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.	force-unauthorized	Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.	<p>The dot1x port-control force-authorized command causes the port to transition to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client.</p> <p>Example</p> <ul style="list-style-type: none">This example of the command designates Ethernet 1 as an authenticator port that is to continue to forward packets. <pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x port-control force-authorized switch(config-if-Et1)#</pre> <p>Example</p> <ul style="list-style-type: none">The dot1x port-control force-unauthorized command places the specified ports in the state of unauthorized, denying any access requests from users of the ports. <pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x port-control force-authorized switch(config-if-Et1)#</pre>
	auto	Enables port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.						
force-authorized	Disables IEEE 802.1X on the interface and causes the port to change to the authorized state without requiring any authentication exchange. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.							
force-unauthorized	Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.							
	Cisco IOS Security Command Reference: Commands A to C (2013), at 354.	Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 558.						

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<div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><h3>authentication port-control</h3><p>To configure the authorization state of a controlled port, use the authentication port-control command in interface configuration mode. To disable the port-control value, use the no form of this command.</p><div>Note Effective with Cisco IOS Release 12.2(33)SXI, the authentication port-control command replaces the dot1x port-control command.</div><div>authentication port-control {auto force-authorized force-unauthorized} no authentication port-control</div><div><table><tr><th>Syntax Description</th><th></th></tr><tr><td>auto</td><td>Enables port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.</td></tr><tr><td>force-authorized</td><td>Disables IEEE 802.1X on the interface and causes the port to change to the authorized state without requiring any authentication exchange. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.</td></tr><tr><td>force-unauthorized</td><td>Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.</td></tr></table></div></div>	Syntax Description		auto	Enables port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.	force-authorized	Disables IEEE 802.1X on the interface and causes the port to change to the authorized state without requiring any authentication exchange. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.	force-unauthorized	Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.	<div><p>— force-unauthorized places the specified or all ports in the state of unauthorized, denying any access requests from users of the ports.</p><p>Examples</p><ul style="list-style-type: none">This command configures the switch to disable 802.1x authentication and directly put the port into the authorized state. This is the default setting.<pre>switch(config)#interface Ethernet 1 switch(config-if-Et1)#dot1x port-control force-authorized switch(config-if-Et1)#</pre>This command configures the switch to disable 802.1x authentication and directly put the port to unauthorized state, ignoring all attempts by the client to authenticate.<pre>switch(config)#interface Ethernet 1 switch(config-if-Et1)#dot1x port-control force-unauthorized switch(config-if-Et1)#</pre></div> <div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 567.</div>
Syntax Description										
auto	Enables port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.									
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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>Related Commands</div> <table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>dot1x max-req</td><td>Sets the maximum number of times that the device sends an EAP-request/identity frame before restarting the authentication process.</td></tr><tr><td>dot1x re-authentication (EtherSwitch)</td><td>Enables periodic reauthentication of the client for the Ethernet switch network module.</td></tr><tr><td>show dot1x (EtherSwitch)</td><td>Displays the 802.1X statistics, administrative status, and operational status for the device or for the specified interface.</td></tr></tbody></table> <p>Cisco IOS Security Command Reference: Commands D to L (2013), at 219.</p>	Command	Description	dot1x max-req	Sets the maximum number of times that the device sends an EAP-request/identity frame before restarting the authentication process.	dot1x re-authentication (EtherSwitch)	Enables periodic reauthentication of the client for the Ethernet switch network module.	show dot1x (EtherSwitch)	Displays the 802.1X statistics, administrative status, and operational status for the device or for the specified interface.	<div>dot1x max-reauth-req</div> <p>The dot1x max-reauth-req command sets the maximum number of times that the switch retransmits an Extensible Authentication Protocol(EAP)-Request frame of types other than EAP-Request/Identity to the client before restarting the authentication process. Value ranges from 1 to 10. Default value is 2.</p> <p>The no dot1x max-reauth-req and default dot1x max-reauth-req commands restores the default value by deleting the corresponding dot1x max-reauth-req command from running-config.</p> <table><tbody><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Management Configuration</td></tr></tbody></table> <p>Command Syntax</p> <pre>dot1x max-reauth-req attempts no dot1x max-reauth-req default dot1x max-reauth-req</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 565.</p>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Management Configuration
Command	Description													
dot1x max-req	Sets the maximum number of times that the device sends an EAP-request/identity frame before restarting the authentication process.													
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Platform	all													
Command Mode	Interface-Ethernet Configuration Interface-Management Configuration													
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>dot1x pae</div> <p>To set the Port Access Entity (PAE) type, use the dot1x pae command in interface configuration mode. To disable the PAE type that was set, use the no form of this command.</p> <div>dot1x pae [supplicant authenticator both] no dot1x pae [supplicant authenticator both]</div> <div>Syntax Description</div> <table><tbody><tr><td>supplicant</td><td>(Optional) The interface acts only as a supplicant and will not respond to messages that are meant for an authenticator.</td></tr><tr><td>authenticator</td><td>(Optional) The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.</td></tr><tr><td>both</td><td>(Optional) The interface behaves both as a supplicant and as an authenticator and thus will respond to all dot1x messages.</td></tr></tbody></table> <p>Cisco IOS Security Command Reference: Commands D to L (2013), at 195.</p>	supplicant	(Optional) The interface acts only as a supplicant and will not respond to messages that are meant for an authenticator.	authenticator	(Optional) The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.	both	(Optional) The interface behaves both as a supplicant and as an authenticator and thus will respond to all dot1x messages.	<div>dot1x pae authenticator</div> <p>The dot1x pae authenticator command sets the Port Access Entity (PAE) type. The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.</p> <p>The no dot1x pae authenticator and default dot1x pae authenticator commands restore the switch default by deleting the corresponding dot1x pae authenticator command from running-config.</p> <table><tbody><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Management Configuration</td></tr></tbody></table> <p>Command Syntax</p> <div>dot1x pae authenticator no dot1x pae authenticator default dot1x pae authenticator</div> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 567.</p>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Management Configuration		
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Platform	all													
Command Mode	Interface-Ethernet Configuration Interface-Management Configuration													

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>dot1x port-control</div><div><div></div><div>Note</div><div>Effective with Cisco IOS Release 12.2(33)SXI, the dot1x port-control command is replaced by the authentication port-control command. See the authentication port-control command for more information.</div></div><div><div>To enable manual control of the authorization state of a controlled port, use the dot1x port-control command in interface configuration mode. To disable the port-control value, use the no form of this command.</div><div><div>dot1x port-control {auto force-authorized force-unauthorized}</div><div>no dot1x port-control</div></div><div><div>Syntax Description</div><table><tr><td>auto</td><td>Enables 802.1X port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.</td></tr><tr><td>force-authorized</td><td>Disables 802.1X on the interface and causes the port to change to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.</td></tr><tr><td>force-unauthorized</td><td>Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.</td></tr></table></div></div></div>	auto	Enables 802.1X port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.	force-authorized	Disables 802.1X on the interface and causes the port to change to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.	force-unauthorized	Denies all access through this interface by forcing the port to change to the unauthorized state, ignoring all attempts by the client to authenticate.	<div><div>The dot1x port-control force-authorized command causes the port to transition to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client.</div><div><div>Example</div><div><ul style="list-style-type: none">This example of the command designates Ethernet 1 as an authenticator port that is to continue to forward packets.<pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x port-control force-authorized switch(config-if-Et1)#</pre></div></div><div><div>Example</div><div><ul style="list-style-type: none">The dot1x port-control force-unauthorized command places the specified ports in the state of unauthorized, denying any access requests from users of the ports.<pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x port-control force-authorized switch(config-if-Et1)#</pre></div></div><div><div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 558.</div></div></div>		
	auto	Enables 802.1X port-based authentication and causes the port to begin in the unauthorized state, allowing only Extensible Authentication Protocol over LAN (EAPOL) frames to be sent and received through the port.								
force-authorized	Disables 802.1X on the interface and causes the port to change to the authorized state without any authentication exchange required. The port transmits and receives normal traffic without 802.1X-based authentication of the client. The force-authorized keyword is the default.									
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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>aaa authentication dot1x</td><td>Specifies one or more AAA methods for use on interfaces running IEEE 802.1X.</td></tr><tr><td>aaa new-model</td><td>Enables the AAA access-control model.</td></tr><tr><td>debug dot1x</td><td>Displays 802.1X debugging information.</td></tr></table> <div><div>Cisco IOS Security Command Reference: Commands D to L (2013), at 211.</div></div>	Command	Description	aaa authentication dot1x	Specifies one or more AAA methods for use on interfaces running IEEE 802.1X.	aaa new-model	Enables the AAA access-control model.	debug dot1x	Displays 802.1X debugging information.	<div><div>Example</div><div><ul style="list-style-type: none">The aaa authentication dot1x command specifies one or more authentication, authorization, and accounting (AAA) methods for use on interfaces running IEEE 802.1X. The following example uses the aaa authentication dot1x command with RADIUS authentication.<pre>switch(config)# aaa authentication dot1x default group radius switch(config)#</pre></div></div> <div><div>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 557.</div></div>
Command	Description									
aaa authentication dot1x	Specifies one or more AAA methods for use on interfaces running IEEE 802.1X.									
aaa new-model	Enables the AAA access-control model.									
debug dot1x	Displays 802.1X debugging information.									

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>dot1x timeout (EtherSwitch)</p> <p>To set the number of retry seconds between 802.1X authentication exchanges when an Ethernet switch network module is installed in the router, use the dot1x timeout command in global configuration mode. To return to the default setting, use the no form of this command.</p> <pre>dot1x timeout {quiet-period seconds} [re-authperiod seconds] [tx-period seconds] no dot1x timeout {quiet-period seconds} [re-authperiod seconds] [tx-period seconds]</pre> <table border="1"> <thead> <tr> <th data-bbox="302 483 422 500">Syntax Description</th><th data-bbox="449 488 594 505">quiet-period seconds</th><th data-bbox="779 488 1100 581">Specifies the time in seconds that the Ethernet switch network module remains in the quiet state following a failed authentication exchange with the client. The range is from 0 to 65535 seconds. The default is 60 seconds.</th></tr> </thead> <tbody> <tr> <td></td><td data-bbox="449 597 602 613">re-authperiod seconds</td><td data-bbox="779 597 1100 654">Specifies the number of seconds between reauthentication attempts. The range is from 1 to 4294967295. The default is 3660 seconds.</td></tr> <tr> <td></td><td data-bbox="449 670 573 686">tx-period seconds</td><td data-bbox="779 670 1100 743">Time in seconds that the switch should wait for a response to an EAP-request/identity frame from the client before retransmitting the request. The range is from 1 to 65535 seconds. The default is 30 seconds.</td></tr> </tbody> </table> <p>Cisco IOS Security Command Reference: Commands D to L (2013), at 218.</p>	Syntax Description	quiet-period seconds	Specifies the time in seconds that the Ethernet switch network module remains in the quiet state following a failed authentication exchange with the client. The range is from 0 to 65535 seconds. The default is 60 seconds.		re-authperiod seconds	Specifies the number of seconds between reauthentication attempts. The range is from 1 to 4294967295. The default is 3660 seconds.		tx-period seconds	Time in seconds that the switch should wait for a response to an EAP-request/identity frame from the client before retransmitting the request. The range is from 1 to 65535 seconds. The default is 30 seconds.	<p>dot1x timeout quiet-period</p> <p>The dot1x timeout quiet-period command sets the number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client. The range is 1 to 65535 seconds; the default is 60.</p> <p>When the switch cannot authenticate the client, the switch remains idle for a set period of time and then tries again. You can provide a faster response time to the user by entering a number smaller than the default.</p> <p>The no dot1x timeout quiet-period and default dot1x timeout quiet-period commands restore the default advertisement interval of 60 seconds by removing the corresponding dot1x timeout quiet-period command from <i>running-config</i>.</p> <p>Platform all Command Mode Interface-Ethernet Configuration Interface-Management Configuration</p> <p>Command Syntax</p> <pre>dot1x timeout quiet-period quiet_time no dot1x timeout quiet-period default dot1x timeout quiet-period</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 569.</p>
Syntax Description	quiet-period seconds	Specifies the time in seconds that the Ethernet switch network module remains in the quiet state following a failed authentication exchange with the client. The range is from 0 to 65535 seconds. The default is 60 seconds.									
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	tx-period seconds	Time in seconds that the switch should wait for a response to an EAP-request/identity frame from the client before retransmitting the request. The range is from 1 to 65535 seconds. The default is 30 seconds.									
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>dot1x max-reauth-req</p> <p>To set the maximum number of times the authenticator sends an Extensible Authentication Protocol (EAP) request/identity frame (assuming that no response is received) to the client, use the dot1x max-reauth-req command in interface configuration mode. To set the maximum number of times to the default setting of 2, use the no form of this command.</p> <pre>dot1x max-reauth-req number no dot1x max-reauth-req</pre> <p>Cisco IOS Security Command Reference: Commands D to L (2013), at 185.</p>	<p>11.3.5 Setting the Maximum Number of Times the Authenticator Sends EAP Request</p> <p>The dot1x max-reauth-req command sets the maximum number of times that the switch restarts the authentication process before a port changes to the unauthorized state.</p> <p>Example</p> <ul style="list-style-type: none"> These commands set the maximum number of times the authenticator sends an Extensible Authentication Protocol (EAP) request/identity frame to the client. <pre>switch(config)#interface ethernet 1 switch(config-if-Et1)#dot1x max-reauth-req 4 switch(config-if-Et1)#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 559.</p>									

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>deny (IPv6)</td><td>Sets deny conditions for an IPv6 access list.</td></tr><tr><td>evaluate (IPv6)</td><td>Nests an IPv6 reflexive access list within an IPv6 access list.</td></tr><tr><td>ipv6 access-list</td><td>Defines an IPv6 access list and enters IPv6 access list configuration mode.</td></tr><tr><td>ipv6 traffic-filter</td><td>Filters incoming or outgoing IPv6 traffic on an interface.</td></tr><tr><td>show ipv6 access-list</td><td>Displays the contents of all current IPv6 access lists.</td></tr></tbody></table> Cisco IOS Security Command Reference: Commands M to R at 440 (2013).	Command	Description	deny (IPv6)	Sets deny conditions for an IPv6 access list.	evaluate (IPv6)	Nests an IPv6 reflexive access list within an IPv6 access list.	ipv6 access-list	Defines an IPv6 access list and enters IPv6 access list configuration mode.	ipv6 traffic-filter	Filters incoming or outgoing IPv6 traffic on an interface.	show ipv6 access-list	Displays the contents of all current IPv6 access lists.	<div>show ipv6 access-lists</div> <div>The show ipv6 access-list command displays the contents of all IPv6 access control lists (ACLs) on the switch. Use the summary option to display only the name of the lists and the number of lines in each list.</div> <div>Platformall Command ModePrivileged EXEC</div> <div>Command Syntax show ipv6 access-list [LIST] [SCOPE]</div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 904.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 782; Arista User Manual, v. 4.11.1 (1/11/13), at 611; Arista User Manual v. 4.10.3 (10/22/12), at 525.</div>
Command	Description													
deny (IPv6)	Sets deny conditions for an IPv6 access list.													
evaluate (IPv6)	Nests an IPv6 reflexive access list within an IPv6 access list.													
ipv6 access-list	Defines an IPv6 access list and enters IPv6 access list configuration mode.													
ipv6 traffic-filter	Filters incoming or outgoing IPv6 traffic on an interface.													
show ipv6 access-list	Displays the contents of all current IPv6 access lists.													
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>security passwords min-length</div> <div>To ensure that all configured passwords are at least a specified length, use the security passwords min-length command in global configuration mode. To disable this functionality, use the no form of this command.</div> <div>security passwords min-length length no security passwords min-length length</div> <div>...</div> <div>The security passwords min-length command provides enhanced security access to the device by allowing you to specify a minimum password length, eliminating common passwords that are prevalent on most networks, such as "lab" and "cisco." This command affects user passwords, enable passwords and secrets, and line passwords. After this command is enabled, any password that is less than the specified length will not work.</div> Cisco IOS Security Command Reference: Commands S to Z at 37 (2013).	<div>password minimum length (Security Management)</div> <div>The password minimum length command provides enhanced security access to the switch by allowing you to specify a minimum password length, eliminating common passwords that are prevalent on most networks. This command affects user passwords, enable passwords and secrets, and line passwords. After this command is enabled, any password that is less than the specified length will fail.</div> <div>...</div> <div>Command Syntax</div> <div>password minimum length characters no password minimum length default password minimum length</div> Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 158.												

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>show aaa method-lists</div><div>To display all the named method lists defined in the authentication, authorization, and accounting (AAA) subsystem, use the show aaa method-listscommand in user EXEC or privileged EXEC mode.</div><div>show aaa method-lists {accounting all authentication authorization}</div><div><div>Syntax Description</div><table><tr><td>accounting</td><td>Displays method lists defined for accounting services.</td></tr><tr><td>all</td><td>Displays method lists defined for all services.</td></tr><tr><td>authentication</td><td>Displays method lists defined for authentication services.</td></tr><tr><td>authorization</td><td>Displays method lists defined for authorization services.</td></tr></table></div><div>Cisco IOS Security Command Reference: Commands S to Z at 185 (2013).</div></div>	accounting	Displays method lists defined for accounting services.	all	Displays method lists defined for all services.	authentication	Displays method lists defined for authentication services.	authorization	Displays method lists defined for authorization services.	<div><div>show aaa method-lists</div><div>The show aaa method-lists command displays all the named method lists defined in the specified authentication, authorization, and accounting (AAA) service.</div><div><div>Platformall</div><div>Command ModePrivileged EXEC</div></div><div><div>Command Syntax</div><div>show aaa method-lists SERVICE_TYPE</div></div><div><div>Parameters</div><div><div><div><div>SERVICE_TYPE</div>the service type of the method lists that the command displays.</div><div><div>— accounting</div>accounting services.</div><div><div>— authentication</div>authentication services.</div><div><div>— authorization</div>authorization services.</div><div><div>— all</div>accounting, authentication, and authorization services.</div></div></div></div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 248.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 192; Arista User Manual, v. 4.11.1 (1/11/13), at 145; Arista User Manual v. 4.10.3 (10/22/12), at 137; Arista User Manual v. 4.9.3.2 (5/3/12), at 126; Arista User Manual v. 4.8.2 (11/18/11), at 115; Arista User Manual v. 4.7.3 (7/18/11), at 99.</div></div>
	accounting	Displays method lists defined for accounting services.								
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authentication	Displays method lists defined for authentication services.									
authorization	Displays method lists defined for authorization services.									
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>snmp-server community</td><td>Specifies the community access string to define the relationship between the SNMP manager and the SNMP agent to permit access to SNMP.</td></tr><tr><td>snmp-server host</td><td>Specifies the recipient (host) of an SNMP notification operation.</td></tr></table> <div>Cisco IOS Security Command Reference: Commands S to Z at 1042 (2013).</div>	Command	Description	snmp-server community	Specifies the community access string to define the relationship between the SNMP manager and the SNMP agent to permit access to SNMP.	snmp-server host	Specifies the recipient (host) of an SNMP notification operation.	<div><div>Configuring the Host</div><div>The snmp-server host command specifies the recipient of a SNMP notification. An SNMP host is the recipient of an SNMP trap operation. The snmp-server host command sets the community string if it was not previously configured.</div><div>Arista User Manual v. 4.14.3F (Rev. 2)(10/2/2014), at 1967.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1686; Arista User Manual, v. 4.11.1 (1/11/13), at 1344; Arista User Manual v. 4.10.3 (10/22/12), at 1110; Arista User Manual v. 4.9.3.2 (5/3/12), at 866; Arista User Manual v. 4.8.2 (11/18/11), at 677; Arista User Manual v. 4.7.3 (7/18/11), at 533.</div></div>		
Command	Description									
snmp-server community	Specifies the community access string to define the relationship between the SNMP manager and the SNMP agent to permit access to SNMP.									
snmp-server host	Specifies the recipient (host) of an SNMP notification operation.									

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>snmp-server enable traps ipsec</p> <p>To enable the router to send IP Security (IPSec) Simple Network Management Protocol (SNMP) notifications, use the snmp-server enable traps ipsec command in global configuration mode. To disable IPSec SNMP notifications, use the no form of this command.</p> <p>snmp-server enable traps ipsec [cryptomap [add delete attach detach]] tunnel [start stop] too-many-sas no snmp-server enable traps ipsec [cryptomap [add delete attach detach]] tunnel [start stop] too-many-sas</p> <p>...</p> <p>SNMP notifications can be sent as traps or inform requests. This command enables both traps and inform requests.</p> <p>Cisco IOS Security Command Reference: Commands S to Z at 1044 - 1045 (2013).</p>	<p>snmp-server enable traps</p> <p>The snmp-server enable traps command enables the transmission of Simple Network Management Protocol (SNMP) notifications as traps or inform requests. This command enables both traps and inform requests for the specified notification types. The snmp-server host command specifies the notification type (traps or informs). Sending notifications requires at least one snmp-server host command.</p> <p>The snmp-server enable traps and no snmp-server enable traps commands, without an MIB parameter, specifies the default notification trap generation setting for all MIBs. These commands, when specifying an MIB, controls notification generation for the specified MIB. The default snmp-server enable traps command resets notification generation to the default setting for the specified MIB.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>snmp-server enable traps [trap_type] no snmp-server enable traps [trap_type] default snmp-server enable traps [trap_type]</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) at 1990 (October 2, 2014).</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1918; Arista User Manual v. 4.12.3 (7/17/13), at 1680; Arista User Manual, v. 4.11.1 (1/11/13), at 1365; Arista User Manual v. 4.10.3 (10/22/12), at 1132; Arista User Manual v. 4.9.3.2 (5/3/12), at 888; Arista User Manual v. 4.8.2 at 696; Arista User Manual v. 4.7.3 (7/18/11), at 552.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>connect</td><td>Logs in to a host that supports Telnet, rlogin, or LAT.</td></tr><tr><td>kerberos clients mandatory</td><td>Causes the rsh, rcp, rlogin, and telnet commands to fail if they cannot negotiate the Kerberos Protocol with the remote server.</td></tr><tr><td>name connection</td><td>Assigns a logical name to a connection.</td></tr><tr><td>rlogin</td><td>Logs in to a UNIX host using rlogin.</td></tr><tr><td>show hosts</td><td>Displays the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses.</td></tr><tr><td>show tcp</td><td>Displays the status of TCP connections.</td></tr></tbody></table> <p>Cisco IOS Security Command Reference: Commands S to Z at 1192 (2013).</p>	Command	Description	connect	Logs in to a host that supports Telnet, rlogin, or LAT.	kerberos clients mandatory	Causes the rsh, rcp, rlogin, and telnet commands to fail if they cannot negotiate the Kerberos Protocol with the remote server.	name connection	Assigns a logical name to a connection.	rlogin	Logs in to a UNIX host using rlogin.	show hosts	Displays the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses.	show tcp	Displays the status of TCP connections.	<p>show hosts</p> <p>The show hosts command displays the default domain name, name lookup service style, a list of name server hosts, and the static hostname-IP address maps.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p>show hosts</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 342.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 276; Arista User Manual, v. 4.11.1 (1/11/13), at 222; Arista User Manual v. 4.10.3 (10/22/12), at 191; Arista User Manual v. 4.9.3.2 (5/3/12), at 177.</p>
Command	Description															
connect	Logs in to a host that supports Telnet, rlogin, or LAT.															
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show tcp	Displays the status of TCP connections.															
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>This command configures the HTTP server to request an X.509v3 certificate from the client in order to authenticate the client during the connection process.</p> <p>In the default connection and authentication process, the client requests a certificate from the HTTP server, but the server does not attempt to authenticate the client. Authenticating the client provides more security than server authentication by itself, but not all web clients may be configured for certificate authority (CA) authentication.</p> <p>Cisco IOS HTTP Services Configuration Guide at 47 (2011).</p>	<p>Examples</p> <ul style="list-style-type: none">These commands configures the HTTP server to request an X.509 certificate from the client in order to authenticate the client during the connection process. <pre>switch(config)#management api http-commands switch(config-mgmt-api-http-cmds)#protocol https certificate switch(config-mgmt-api-http-cmds)#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 87.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 75.</p>														

Copyright Registration Information	Cisco	Arista				
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><td><i>start-ip</i></td><td>Starting IP address that defines the range of addresses in the address pool.</td></tr><tr><td><i>end-ip</i></td><td>Ending IP address that defines the range of addresses in the address pool.</td></tr></table> Cisco IOS IP Addressing Services Command Reference at 22 (2011).	<i>start-ip</i>	Starting IP address that defines the range of addresses in the address pool.	<i>end-ip</i>	Ending IP address that defines the range of addresses in the address pool.	<i>start_addr</i> The starting IP address that defines the range of addresses in the address pool (IPv4 addresses in dotted decimal notation). <i>end_addr</i> The ending IP address that defines the range of addresses in the address pool. (IPv4 addresses in dotted decimal notation). Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1278. <i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1075.
<i>start-ip</i>	Starting IP address that defines the range of addresses in the address pool.					
<i>end-ip</i>	Ending IP address that defines the range of addresses in the address pool.					
Cisco IOS 15.4 Effective date of registration: 11/26/2014	clear arp-cache To refresh dynamically created entries from the Address Resolution Protocol (ARP) cache, use the clear arp-cache command in privileged EXEC mode. clear arp-cache [interface type number] [vrf vrf-name] ip-address Cisco IOS IP Addressing Services Command Reference at 59 (2011).	clear arp-cache The clear arp-cache command refreshes dynamic entries in the Address Resolution Protocol (ARP) cache. Refreshing the ARP cache updates IP address and MAC address mapping information in the ARP table and removes expired ARP entries not yet deleted by an internal, timer-driven process. The command, without arguments, refreshes ARP cache entries for all enabled interfaces. With arguments, the command refreshes cache entries for the specified interface. Executing clear arp-cache for all interfaces can result in extremely high CPU usage while the tables are resolving. Platform all Command Mode Privileged EXEC Command Syntax clear arp-cache [VRF_INSTANCE] [INTERFACE_NAME] Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1255. <i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1060; Arista User Manual, v. 4.11.1 (1/11/13), at 846; Arista User Manual v. 4.10.3 (10/22/12), at 692.				

Copyright Registration Information	Cisco	Arista				
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>ip address</div><p>To set a primary or secondary IP address for an interface, use the ip address command in interface configuration mode. To remove an IP address or disable IP processing, use the no ip address command.</p><pre>ip address ip-address mask [secondary [vrf vrf-name]] no ip address ip-address mask [secondary [vrf vrf-name]]</pre><p>Cisco IOS IP Addressing Services Command Reference at 166 (2011)</p><p>An interface can have one primary IP address and multiple secondary IP addresses. Packets generated by the Cisco IOS software always use the primary IP address. Therefore, all routers and access servers on a segment should share the same primary network number.</p><p>Hosts can determine subnet masks using the Internet Control Message Protocol (ICMP) mask request message. Routers respond to this request with an ICMP mask reply message.</p><p>You can disable IP processing on a particular interface by removing its IP address with the no ip address command. If the software detects another host using one of its IP addresses, it will print an error message on the console.</p><p>The optional secondary keyword allows you to specify an unlimited number of secondary addresses. Secondary addresses are treated like primary addresses, except the system never generates datagrams other than routing updates with secondary source addresses. IP broadcasts and Address Resolution Protocol (ARP) requests are handled properly, as are interface routes in the IP routing table.</p><p>Cisco IOS IP Addressing Services Command Reference at 167 (2011).</p></div>	<div><div>ip address</div><p>The ip address command configures the IPv4 address and connected subnet on the configuration mode interface. Each interface can have one primary address and multiple secondary addresses.</p><p>The no ip address and default ip address commands remove the IPv4 address assignment from the configuration mode interface. Entering the command without specifying an address removes the primary and all secondary addresses from the interface. The primary address cannot be deleted until all secondary addresses are removed from the interface.</p><p>Removing all IPv4 address assignments from an interface disables IPv4 processing on that port.</p><table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Loopback Configuration Interface-Management Configuration Interface-Port-channel Configuration Interface-VLAN Configuration</td></tr></table><p>Command Syntax</p><pre>ip address ipv4_subnet [PRIORITY] no ip address [ipv4_subnet] [PRIORITY] default ip address [ipv4_subnet] [PRIORITY]</pre><p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1262.</p><p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1066; Arista User Manual, v. 4.11.1 (1/11/13), at 850; Arista User Manual v. 4.10.3 (10/22/12), at 696.</p></div>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Loopback Configuration Interface-Management Configuration Interface-Port-channel Configuration Interface-VLAN Configuration
	Platform	all				
Command Mode	Interface-Ethernet Configuration Interface-Loopback Configuration Interface-Management Configuration Interface-Port-channel Configuration Interface-VLAN Configuration					

Copyright Registration Information	Cisco	Arista													
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>ip nat</div>inside destination</div> <p>To enable the Network Address Translation (NAT) of a globally unique outside host address to multiple inside host addresses, use the ip nat inside destination command in global configuration mode. This command is primarily used to implement TCP load balancing by performing destination address rotary translation. To remove the dynamic association to a pool, use the no form of this command.</p> <pre>ip nat inside destination list {access-list-number name} pool name [mapping-id map-id] no ip nat inside destination list {access-list-number name} pool name [mapping-id map-id]</pre> <table><tr><td>Syntax Description</td><td><div>list access-list-number</div><div>Standard IP access list number. Packets with destination addresses that pass the access list are translated using global addresses from the named pool.</div></td><td></td></tr><tr><td></td><td><div>list name</div><div>Name of a standard IP access list. Packets with destination addresses that pass the access list are translated using global addresses from the named pool.</div></td><td></td></tr><tr><td></td><td><div>pool name</div><div>Name of the pool from which global IP addresses are allocated during dynamic translation.</div></td><td></td></tr></table> <p>Cisco IOS IP Addressing Services Command Reference at 405 (2011).</p>	Syntax Description	<div>list access-list-number</div> <div>Standard IP access list number. Packets with destination addresses that pass the access list are translated using global addresses from the named pool.</div>			<div>list name</div> <div>Name of a standard IP access list. Packets with destination addresses that pass the access list are translated using global addresses from the named pool.</div>			<div>pool name</div> <div>Name of the pool from which global IP addresses are allocated during dynamic translation.</div>		<div><div>ip nat</div>pool</div> <p>The ip nat pool command defines a pool of addresses using start address, end address, and either netmask or prefix length. If its starting IP address and ending IP address are the same, there is only one address in the address pool.</p> <p>During address translation, the NAT server selects an IP address from the address pool to be the translated source address.</p> <p>The no ip nat pool removes the corresponding ip nat pool command from <i>running_config</i>.</p> <table><tr><td>Platform</td><td>FM6000</td></tr><tr><td>Command Mode</td><td>Global Configuration</td></tr></table> <p>Command Syntax</p> <pre>ip nat pool pool_name [ADDRESS_SPAN] SUBNET_SIZE no ip nat pool pool_name default ip nat pool pool_name</pre> <p>Parameters</p> <ul style="list-style-type: none"><div>pool_name</div> name of the pool from which global IP addresses are allocated. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1278.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1075.</p>	Platform	FM6000	Command Mode	Global Configuration
	Syntax Description	<div>list access-list-number</div> <div>Standard IP access list number. Packets with destination addresses that pass the access list are translated using global addresses from the named pool.</div>													
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Platform	FM6000														
Command Mode	Global Configuration														

Copyright Registration Information	Cisco	Arista				
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>ip nat source</div> <p>To enable Network Address Translation (NAT) on a virtual interface without inside or outside specification, use the ip nat source command in global configuration mode.</p> <p>Cisco IOS IP Addressing Services Command Reference (2011), at 439.</p> <table><tr><td>pool name</td><td>Name of the pool from which global IP addresses are allocated dynamically.</td></tr><tr><td>overload</td><td>(Optional) Enables the router to use one global address for many local addresses. When overloading is configured, the TCP or User Datagram Protocol (UDP) port number of each inside host distinguishes between the multiple conversations using the same local IP address.</td></tr></table> <p>Cisco IOS IP Addressing Services Command Reference (2011), at 440.</p>	pool name	Name of the pool from which global IP addresses are allocated dynamically.	overload	(Optional) Enables the router to use one global address for many local addresses. When overloading is configured, the TCP or User Datagram Protocol (UDP) port number of each inside host distinguishes between the multiple conversations using the same local IP address.	<div>ip nat source dynamic</div> <p>The ip nat source dynamic command enables Network Address Translation (NAT) of a specified source address for packets sent and received on the configuration mode interface. This command installs hardware translation entries for forward and reverse traffic. When the rule specifies a group, the command does not install the reverse path in hardware. The command may include an access control list to filter packets for translation.</p> <p>...</p> <div>overload</div> <p>Enables the switch to use one global address for many local addresses. When overloading is configured, the TCP or User Datagram Protocol (UDP) port number of each inside host distinguishes between the multiple conversations using the same local IP address.</p> <div>pool pool_name</div> <p>The name of the pool from which global IP addresses are allocated dynamically.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/14), at 1279.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1076.</p>
	pool name	Name of the pool from which global IP addresses are allocated dynamically.				
	overload	(Optional) Enables the router to use one global address for many local addresses. When overloading is configured, the TCP or User Datagram Protocol (UDP) port number of each inside host distinguishes between the multiple conversations using the same local IP address.				

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<div>Copyright Registration Information</div> <div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><div><div>ip nat pool</div><div>To define a pool of IP addresses for Network Address Translation (NAT), use the ip nat poolcommand in global configuration mode. To remove one or more addresses from the pool, use the no form of this command.</div><div><div>ip nat pool</div><div>name start-ip end-ip {netmask netmask prefix-length prefix-length} [add-route] [type {match-host rotary}] [accounting list-name] [arp-ping] [nopreservation]</div><div>no ip nat pool</div><div>name start-ip end-ip {netmask netmask prefix-length prefix-length} [add-route] [type {match-host rotary}] [accounting list-name] [arp-ping] [nopreservation]</div></div><table><tr><th>Syntax Description</th><th></th></tr><tr><td>name</td><td>Name of the pool.</td></tr><tr><td>start-ip</td><td>Starting IP address that defines the range of addresses in the address pool.</td></tr><tr><td>end-ip</td><td>Ending IP address that defines the range of addresses in the address pool.</td></tr><tr><td>netmask netmask</td><td>Specifies the network mask that indicates which address bits belong to the network and subnetwork fields and which bits belong to the host field. Specify the netmask of the network to which the pool addresses belong.</td></tr><tr><td>prefix-length prefix-length</td><td>Specifies the number that indicates how many bits of the netmask are ones (how many bits of the address indicate network). Specify the netmask of the network to which the pool addresses belong.</td></tr></table><div>Cisco IOS IP Addressing Services Command Reference (2011), at 422.</div><div>This command defines a pool of addresses using start address, end address, and either netmask or prefix length. The pool could define an inside global pool, an outside local pool, or a rotary pool.</div><div>Cisco IOS IP Addressing Services Command Reference (2011), at 423.</div></div></div>	Syntax Description		name	Name of the pool.	start-ip	Starting IP address that defines the range of addresses in the address pool.	end-ip	Ending IP address that defines the range of addresses in the address pool.	netmask netmask	Specifies the network mask that indicates which address bits belong to the network and subnetwork fields and which bits belong to the host field. Specify the netmask of the network to which the pool addresses belong.	prefix-length prefix-length	Specifies the number that indicates how many bits of the netmask are ones (how many bits of the address indicate network). Specify the netmask of the network to which the pool addresses belong.	<div><div><div>ip nat pool</div><div>The ip nat pool command defines a pool of addresses using start address, end address, and either netmask or prefix length. If its starting IP address and ending IP address are the same, there is only one address in the address pool.</div><div>During address translation, the NAT server selects an IP address from the address pool to be the translated source address.</div><div>The no ip nat pool removes the corresponding ip nat pool command from running_config.</div><div><div>Platform</div><div>FM6000</div><div>Command Mode</div><div>Global Configuration</div></div><div>Command Syntax</div><div><div>ip nat pool</div><div>pool_name [ADDRESS_SPAN] SUBNET_SIZE</div><div>no ip nat pool</div><div>pool_name</div><div>default ip nat pool</div><div>pool_name</div></div><div>Parameters</div><div><div><div>pool_name</div><div>name of the pool from which global IP addresses are allocated.</div></div><div><div>ADDRESS_SPAN</div><div>Options include:</div><div><div>start_addr</div><div>The starting IP address that defines the range of addresses in the address pool (IPv4 addresses in dotted decimal notation).</div></div><div><div>end_addr</div><div>The ending IP address that defines the range of addresses in the address pool. (IPv4 addresses in dotted decimal notation).</div></div></div><div><div>SUBNET_SIZE</div><div>this functions as a sanity check to ensure it is not a network or broadcast network</div><div>Options include:</div><div><div>netmask ipv4_addr</div><div>The network mask that indicates which address bits belong to the network and subnetwork fields and which bits belong to the host field. Specify the netmask of the network to which the pool addresses belong (dotted decimal notation).</div></div><div><div>prefix-length <0 to 32></div><div>The number that indicates how many bits of the netmask are ones (how many bits of the address indicate network). Specify the netmask of the network to which the pool addresses belong.</div></div></div></div></div></div>
	Syntax Description													
	name	Name of the pool.												
	start-ip	Starting IP address that defines the range of addresses in the address pool.												
	end-ip	Ending IP address that defines the range of addresses in the address pool.												
netmask netmask	Specifies the network mask that indicates which address bits belong to the network and subnetwork fields and which bits belong to the host field. Specify the netmask of the network to which the pool addresses belong.													
prefix-length prefix-length	Specifies the number that indicates how many bits of the netmask are ones (how many bits of the address indicate network). Specify the netmask of the network to which the pool addresses belong.													

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>ip nat translation (timeout)</p> <p>To change the amount of time after which Network Address Translation (NAT) translations time out, use the ip nat translation command in global configuration mode. To disable the timeout, use the no form of this command.</p> <p>ip nat translation {arp-ping-timeout dns-timeout first-timeout icmp-timeout port-timeout {tcp port-number udp port-number} pptp-timeout routemap-entry-timeout syn-timeout tcp-timeout timeout udp-timeout} {seconds never}</p> <p>Cisco IOS IP Addressing Services Command Reference (2011), at 446.</p> <table><tr><td>seconds</td><td>Number of seconds after which the specified port translation times out.</td></tr></table> <p>Cisco IOS IP Addressing Services Command Reference (2011), at 447.</p>	seconds	Number of seconds after which the specified port translation times out.	<p>Use the ip nat translation tcp-timeout or ip nat translation udp-timeout commands to change the amount of time after which Network Address Translation (NAT) translations time out.</p> <p>Example</p> <ul style="list-style-type: none">This command globally sets the inactive timeout for TCP to 600 seconds.This command globally sets the inactive timeout for UDP to 800 seconds. <p>Arista User Manual 4.14.3F (Rev. 2) (10/2/2014), at 1247</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1053.</p> <p>period The number of seconds after which the specified port translation times out. Value ranges from 0 to 4294967295. Default value is 86400 (24 hours).</p> <p>Arista User Manual 4.14.3F (Rev. 2) (10/2/2014), at 1284</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1079.</p>		
	seconds	Number of seconds after which the specified port translation times out.				
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show ip dhcp snooping</td><td>Displays the DHCP snooping configuration.</td></tr></table> <p>Cisco IOS IP Addressing Services Command Reference (2011), at 311.</p>	Command	Description	show ip dhcp snooping	Displays the DHCP snooping configuration.	<p>show ip dhcp snooping</p> <p>The show ip dhcp snooping command displays the DHCP snooping configuration.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1302.</p>
Command	Description					
show ip dhcp snooping	Displays the DHCP snooping configuration.					

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>show ip dhcp snooping</div> <div>To display the DHCP snooping configuration, use the show ip dhcp snooping command in privileged EXEC mode.</div> <div>show ip dhcp snooping</div> <div>...</div> <table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>ip dhcp snooping</td><td>Globally enables DHCP snooping.</td></tr><tr><td>ip dhcp snooping binding</td><td>Sets up and generates a DHCP binding configuration to restore bindings across reboots.</td></tr></tbody></table> <div>Cisco IOS IP Addressing Services Command Reference (2011), at 673.</div> <div>ip dhcp snooping vlan</div> <div>Enables DHCP snooping on a VLAN or a group of VLANs.</div> <div>Cisco IOS IP Addressing Services Command Reference (2011), at 674.</div>	Command	Description	ip dhcp snooping	Globally enables DHCP snooping.	ip dhcp snooping binding	Sets up and generates a DHCP binding configuration to restore bindings across reboots.	<div>show ip dhcp snooping</div> <div>The show ip dhcp snooping command displays the DHCP snooping configuration.</div> <div>Platform Trident Command Mode EXEC</div> <div>Command Syntax</div> <div>show ip dhcp snooping</div> <div>Related Commands</div> <div><ul style="list-style-type: none">ip dhcp snooping globally enables DHCP snooping.ip dhcp snooping vlan enables DHCP snooping on specified VLANsip dhcp snooping information option enables insertion of option-82 snooping data.ip helper-address enables the DHCP relay agent on a configuration mode interface.</div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1302.</div>
	Command	Description						
ip dhcp snooping	Globally enables DHCP snooping.							
ip dhcp snooping binding	Sets up and generates a DHCP binding configuration to restore bindings across reboots.							
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>dir</td><td>Displays a list of files on a file system.</td></tr></tbody></table> <div>Cisco IOS IP Application Services Command Reference (2013), at 283.</div>	Command	Description	dir	Displays a list of files on a file system.	<div>dir</div> <div>The dir command displays a list of files on a file system.</div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 139</div> <div>Arista User Manual v. 4.12.3 (7/17/13), at 115; Arista User Manual, v. 4.11.1 (1/11/13), at 55.</div>		
Command	Description							
dir	Displays a list of files on a file system.							

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<div data-bbox="306 280 1115 331"> <div>show ip mroute</div> <div>Displays the contents of the IP multicast routing table.</div> </div> <p>Cisco IOS IP Switching Command Reference (2013), at 483.</p>	<div data-bbox="1178 280 2028 313"> <div>The show ip mroute command displays the contents of the IP multicast routing table.</div> </div> <ul style="list-style-type: none"> show ip mroute displays information for all routes in the table. show ip mroute gp_addr displays information for the specified multicast group. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1757</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1485; Arista User Manual, v. 4.11.1 (1/11/13), at 1187; Arista User Manual v. 4.10.3 (10/22/12), at 1022; Arista User Manual v. 4.9.3.2 (5/3/12), at 780; Arista User Manual v. 4.8.2 (11/18/11), at 599.</p>
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<div data-bbox="306 664 1115 915"> <div>community-string</div> <div> <div>Password-like community string sent with the notification operation.</div> <div> <p>Note You can set this string using the snmp-server host command by itself, but Cisco recommends that you define the string using the snmp-server community command prior to using the snmp-server host command.</p> <p>Note The "at" sign (@) is used for delimiting the context information.</p> </div> </div> </div> <p>Cisco IOS IP Switching Command Reference (2013), at 526.</p>	<ul style="list-style-type: none"> comm_str community string (used as password) sent with the notification operation. <div data-bbox="1199 696 2028 747"> <div>Although this string can be set with the snmp-server host command, the preferred method is defining it with the snmp-server community command prior to using this command.</div> </div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1995.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1685; Arista User Manual, v. 4.11.1 (1/11/13), at 1370; Arista User Manual v. 4.10.3 (10/22/12), at 1137; Arista User Manual v. 4.9.3.2 (5/3/12), at 893; Arista User Manual v. 4.8.2 (11/18/11), at 700; Arista User Manual v. 4.7.3 (7/18/11), at 479.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>SNMP notifications can be sent as traps or inform requests. Traps are unreliable because the receiver does not send acknowledgments when it receives traps. The sender cannot determine if the traps were received. However, an SNMP entity that receives an inform request acknowledges the message with an SNMP response protocol data unit (PDU). If the sender never receives the response, the inform request can be sent again. Thus, informs are more likely to reach their intended destination than traps.</p> <p>Compared to traps, informs consume more resources in the agent and in the network. Unlike a trap, which is discarded as soon as it is sent, an inform request must be held in memory until a response is received or the request times out. Also, traps are sent only once; an inform may be tried several times. The retries increase traffic and contribute to a higher overhead on the network.</p> <p>Cisco IOS IP Switching Command Reference (2013), at 530.</p>	<p>37.2.2 SNMP Notifications</p> <p>SNMP notifications are messages, sent by the agent, to inform managers of an event or a network condition. A <i>trap</i> is an unsolicited notification. An <i>inform</i> (or inform request) is a trap that includes a request for a confirmation that the message is received. Events that a notification can indicate include improper user authentication, restart, and connection losses.</p> <p>Traps are less reliable than informs because the receiver does not send any acknowledgment. However, traps are often preferred because informs consume more switch and network resources. A trap is sent only once and is discarded as soon as it is sent. An inform request remains in memory until a response is received or the request times out. An inform may be retried several times, increasing traffic and contributing to higher network overhead.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1963,</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1653; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 (11/18/11), at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>nssa-only</p> <p>(Optional) Limits the default advertisement to this NSSA area by setting the propagate (P) bit in the type-7 LSA to zero.</p> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 9.</p>	<p>TYPE area type. Values include:</p> <ul style="list-style-type: none"> — <no parameter> area is configured as a not-so-stubby area (NSSA). — nssa-only limits the default advertisement to this NSSA area by setting the propagate (P) bit in the type-7 LSA to zero. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/14), at 1498.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1283; Arista User Manual, v. 4.11.1 (1/11/13), at 958.</p>

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<div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><div>area nssa translate</div><div>To configure a not-so-stubby area (NSSA) and to configure the OSPF Forwarding Address Suppression in Translated Type-5 LSAs feature, use the <code>area nssa translate</code> command in router address family topology or router configuration mode. To remove the NSSA distinction from the area, use the <code>no</code> form of this command.</div><div><div>area nssa translate</div> ommand<code>area area-id nssa translate type7 [always] [suppress-fa] [default-information-originate [metric ospf-metric] [metric-type ospf-link-state-type] [nssa-only]] [no-ext-capability] [no-redistribution] [no-summary]</code></div><div><code>no area area-id nssa translate type7 [always] [suppress-fa] [default-information-originate [metric ospf-metric] [metric-type ospf-link-state-type] [nssa-only]] [no-ext-capability] [no-redistribution] [no-summary]</code></div></div> <div><table><tr><th>Syntax</th><th>Description</th></tr><tr><td>area-id</td><td>Identifier for the stub area or NSSA. The identifier can be specified as either a decimal value or an IP address.</td></tr><tr><td>translate</td><td>Translates one type of link-state advertisement (LSA) to another type of LSA. This keyword takes effect only on an NSSA Area Border Router (ABR) or an NSSA Autonomous System Boundary Router (ASBR).</td></tr><tr><td>type7</td><td>(Required) Translates a Type-7 LSA to a Type-5 LSA. This keyword takes effect only on an NSSA ABR or an NSSA ASBR.</td></tr><tr><td>always</td><td>(Optional) Configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs. You can configure the <code>always</code> keyword only in router configuration mode, not in router address family topology configuration mode.</td></tr></table></div> <div>Cisco IOS IP Routing:OSPF Command Reference (2013), at 11.</div>	Syntax	Description	area-id	Identifier for the stub area or NSSA. The identifier can be specified as either a decimal value or an IP address.	translate	Translates one type of link-state advertisement (LSA) to another type of LSA. This keyword takes effect only on an NSSA Area Border Router (ABR) or an NSSA Autonomous System Boundary Router (ASBR).	type7	(Required) Translates a Type-7 LSA to a Type-5 LSA. This keyword takes effect only on an NSSA ABR or an NSSA ASBR.	always	(Optional) Configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs. You can configure the <code>always</code> keyword only in router configuration mode, not in router address family topology configuration mode.	<div><div>area nssa translate type7 always (OSPFv3)</div><div>The <code>area nssa translate type7 always</code> command translates Type-7 link-state advertisement (LSA) to Type-5 of LSAs.</div><div>The <code>no area nssa translate type7 always</code> command removes the NSSA distinction from the area.</div><div><table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-OSPF3 Configuration</td></tr></table></div><div>Command Syntax<div><div>area area_id nssa translate type7 always</div><div>no area_id nssa translate type7 always</div><div>default area_id nssa translate type7 always</div></div></div><div>Parameters<ul style="list-style-type: none">area_id area number.<div>Valid formats: integer <1 to 4294967295> or dotted decimal <0.0.0.1 to 255.255.255.255> Area 0 (or 0.0.0.0) is not configurable; it is always <i>normal</i>. <i>Running-config</i> stores value in dotted decimal notation.</div></div><div>Example<ul style="list-style-type: none">This command configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs.</div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1501.</div><div>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1451; Arista User Manual v. 4.12.3 (7/17/13), at 1286; Arista User Manual, v. 4.11.1 (1/11/13), at 1036.</div></div>	Platform	all	Command Mode	Router-OSPF3 Configuration
Syntax	Description															
area-id	Identifier for the stub area or NSSA. The identifier can be specified as either a decimal value or an IP address.															
translate	Translates one type of link-state advertisement (LSA) to another type of LSA. This keyword takes effect only on an NSSA Area Border Router (ABR) or an NSSA Autonomous System Boundary Router (ASBR).															
type7	(Required) Translates a Type-7 LSA to a Type-5 LSA. This keyword takes effect only on an NSSA ABR or an NSSA ASBR.															
always	(Optional) Configures an NSSA ABR router as a forced NSSA LSA translator. The NSSA ABR router unconditionally translates Type-7 LSAs to Type-5 LSAs. You can configure the <code>always</code> keyword only in router configuration mode, not in router address family topology configuration mode.															
Platform	all															
Command Mode	Router-OSPF3 Configuration															
<div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><table><tr><th>Command</th><th>Description</th></tr><tr><td>show ip route</td><td>Displays the current state of the routing table.</td></tr></table></div> <div>Cisco IOS IP Routing:OSPF Command Reference (2013), at 51.</div>	Command	Description	show ip route	Displays the current state of the routing table.	<div><div>show ip route age</div><div>The <code>show ip route age</code> command displays the current state of the routing table and specifies the time the route was updated.</div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1313.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1102.</div></div>										
Command	Description															
show ip route	Displays the current state of the routing table.															

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>ip ospf name-lookup</div><p>To configure Open Shortest Path First (OSPF) to look up Domain Name System (DNS) names for use in all OSPF <code>show EXEC</code> command displays, use the <code>ip ospf name-lookup</code> command in global configuration mode. To disable this function, use the <code>no</code> form of this command.</p><div><div>ip ospf name-lookup</div><div>no ip ospf name-lookup</div></div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Command Default</div><div>This command is disabled by default.</div></div><div><div>Command Modes</div><div>Global configuration</div></div><div><div>Command History</div><table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>10.0</td><td>This command was introduced.</td></tr><tr><td>12.2(33)SRA</td><td>This command was integrated into Cisco IOS Release 12.2(33)SRA.</td></tr><tr><td>12.2SX</td><td>This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.</td></tr></tbody></table></div><div><div>Usage Guidelines</div><div>This command makes it easier to identify a router because the router is displayed by name rather than by its router ID or neighbor ID.</div></div><p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 109.</p></div>	Release	Modification	10.0	This command was introduced.	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.	<div><div>ip ospf name-lookup</div><p>The <code>ip ospf name-lookup</code> command causes the switch to display DNS names in place of numeric OSPFv2 router IDs in all subsequent OSPFv2 show commands, including:</p><ul style="list-style-type: none"><code>show ip ospf</code><code>show ip ospf border-routers</code><code>show ip ospf database <link state list></code><code>show ip ospf database database-summary</code><code>show ip ospf database <link-state details></code><code>show ip ospf interface</code><code>show ip ospf neighbor</code><code>show ip ospf request-list</code><code>show ip ospf retransmission-list</code><p>Although this command makes it easier to identify a router, the switch relies on a configured DNS server to respond to reverse DNS queries, which may be slower than displaying numeric router IDs.</p><p>The <code>no ip ospf name-lookup</code> and default <code>ip ospf name-lookup</code> commands remove the <code>ip ospf name-lookup</code> command from <i>running-config</i>, restoring the default behavior of displaying OSPFv2 router IDs by their numeric value.</p><div><div>Platform</div><div>all</div></div><div><div>Command Mode</div><div>Global Configuration</div></div><div><div>Command Syntax</div><div><div>ip ospf name-lookup</div><div>no ip ospf name-lookup</div><div>default ip ospf name-lookup</div></div></div></div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1431.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1218; Arista User Manual, v. 4.11.1 (1/11/13), at 975; Arista User Manual v. 4.10.3 (10/22/12), at 805; Arista User Manual v. 4.9.3.2 (5/3/12), at 628; Arista User Manual v. 4.8.2 (11/18/11), at 464; Arista User Manual v. 4.7.3 (7/18/11), at 337; Arista User Manual v. 4.6.0 (12/22/2010), at 200.</p>
	Release	Modification								
	10.0	This command was introduced.								
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.									
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.									

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>log-adjacency-changes</p> <p>To configure the router to send a syslog message when an Open Shortest Path First (OSPF) neighbor goes up or down, use the log-adjacency-changes command in router configuration mode. To turn off this function, use the no form of this command.</p> <p>log-adjacency-changes [detail] no log-adjacency-changes [detail]</p> <table border="1"> <tr> <td>Syntax Description</td><td>detail</td><td>(Optional) Sends a syslog message for each state change, not just when a neighbor goes up or down.</td></tr> </table> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 131.</p>	Syntax Description	detail	(Optional) Sends a syslog message for each state change, not just when a neighbor goes up or down.	<p>log-adjacency-changes (OSPFv3)</p> <p>The log-adjacency-changes command configures the switch to send syslog messages when it detects a neighbor has gone up or down. Log message sending is disabled by default. Valid options include:</p> <ul style="list-style-type: none"> log-adjacency-changes: switch sends syslog messages when a neighbor goes up or down (default). no log-adjacency-changes disables link state change syslog reporting. <p>The default option is active when <i>running-config</i> does not contain any form of the command. Entering the command in any form replaces the previous command state in <i>running-config</i>. The default log-adjacency-changes command restores the default state by removing the log-adjacency-changes statement from <i>running-config</i>.</p> <p>Platform all Command Mode Router-OSPF3 Configuration</p> <p>Command Syntax</p> <p>log-adjacency-changes [INFO_LEVEL] no log-adjacency-changes default log-adjacency-changes</p> <p>Parameters</p> <ul style="list-style-type: none"> INFO_LEVEL specifies the type of information displayed. Options include <ul style="list-style-type: none"> <no parameter> displays all log adjacency change messages detail displays syslog message for each state change, not just when a neighbor goes up or down. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1518.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1303; Arista User Manual, v. 4.11.1 (1/11/13), at 1054; Arista User Manual v. 4.10.3 (10/22/12), at 811.</p>
Syntax Description	detail	(Optional) Sends a syslog message for each state change, not just when a neighbor goes up or down.			

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>max-metric router-lsa</div> <div>To configure a router that is running the Open Shortest Path First (OSPF) protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their shortest path first (SPF) calculations, use the max-metric router-lsacommmand in router address family topology or router configuration mode. To disable the advertisement of a maximum metric, use the no form of this command.</div> <div>max-metric router-lsa [external-lsa [max-metric-value]] [include-stub] [on-startup {seconds wait-for-bgp}] [summary-lsa [max-metric-value]] no max-metric router-lsa [external-lsa [max-metric-value]] [include-stub] [on-startup {seconds wait-for-bgp}] [summary-lsa [max-metric-value]]</div> <div>Syntax Description</div> <table><tr><td>external-lsa</td><td>(Optional) Configures the router to override the external LSA metric with the maximum metric value.</td></tr><tr><td>max-metric-value</td><td>(Optional) Maximum metric value for LSAs. The configurable range is from 1 to 16777215. The default value is 16711680.</td></tr><tr><td>include-stub</td><td>(Optional) Configures the router to advertise the maximum metric for stub links in router LSAs.</td></tr><tr><td>on-startup</td><td>(Optional) Configures the router to advertise a maximum metric at startup.</td></tr><tr><td>seconds</td><td>(Optional) Maximum metric value for the specified time interval. The configurable range is from 5 to 86400 seconds. There is no default timer value for this configuration option.</td></tr><tr><td>wait-for-bgp</td><td>(Optional) Configures the router to advertise a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.</td></tr><tr><td>summary-lsa</td><td>(Optional) Configures the router to override the summary LSA metric with the maximum metric value.</td></tr></table> <div>Cisco IOS IP Routing:OSPF Command Reference (2013), at 136.</div>	external-lsa	(Optional) Configures the router to override the external LSA metric with the maximum metric value.	max-metric-value	(Optional) Maximum metric value for LSAs. The configurable range is from 1 to 16777215. The default value is 16711680.	include-stub	(Optional) Configures the router to advertise the maximum metric for stub links in router LSAs.	on-startup	(Optional) Configures the router to advertise a maximum metric at startup.	seconds	(Optional) Maximum metric value for the specified time interval. The configurable range is from 5 to 86400 seconds. There is no default timer value for this configuration option.	wait-for-bgp	(Optional) Configures the router to advertise a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.	summary-lsa	(Optional) Configures the router to override the summary LSA metric with the maximum metric value.	<div>max-metric router-lsa (OSPFv3)</div> <div>The max-metric router-lsa command allows the OSPFv3 protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their SPF calculations.</div> <div>The no max-metric router-lsa and default max-metric router-lsa commands disable the advertisement of a maximum metric.</div> <div>Platformall Command ModeRouter-OSPF3 Configuration</div> <div>Command Syntax</div> <div>max-metric router-lsa [EXTERNAL] [STUB] [STARTUP] [SUMMARY] no max-metric router-lsa [EXTERNAL] [STUB] [STARTUP] [SUMMARY] default max-metric router-lsa [EXTERNAL] [STUB] [STARTUP] [SUMMARY]</div> <div>All parameters can be placed in any order.</div> <div>Parameters</div> <div><div><div>EXTERNAL</div>advertised metric value. Values include:<div><div><no parameter></div>Metric is set to the default value of 1.<div>external-lsa</div>Configures the router to override the External LSA / NSSA-External metric with the maximum metric value.<div>external-lsa <1 to 16777215></div>The configurable range is from 1 to 0xFFFFFFFF. The default value is 0xFF0000. This range can be used with external LSA, summary LSA extensions to indicate the respective metric you want with the LSA.</div></div><div><div>STUB</div>advertised metric type. Values include:<div><div><no parameter></div>Metric type is set to the default value of 2.<div>include-stub</div>Advertises stub links in router-LSA with the max-metric value (0xFFFF).</div></div><div><div>STARTUP</div>limit scope of LSAs. Values include:<div><div><no parameter></div>LSA can be translated<div>on-startup</div>Configures the router to advertise a maximum metric at startup only valid in no and default command formats).<div>on-startup wait-for-bgp</div>Configures the router to advertise a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.<div>on-startup <5 to 86400></div>Sets the maximum metric temporarily after a reboot to originate router-LSAs with the max-metric value.<div>wait-for-bgp</div>or an on-start time value is not included in no and default commands.</div></div><div><div>SUMMARY</div>advertised metric value. Values include:<div><div><no parameter></div>Metric is set to the default value of 1.<div>summary-lsa</div>Configures the router to override the summary LSA metric with the maximum metric value for both type 3 and type 4 Summary LSAs.<div>summary-lsa <1 to 16777215></div>Metric is set to the specified value.</div></div></div>	Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1519.
	external-lsa	(Optional) Configures the router to override the external LSA metric with the maximum metric value.															
max-metric-value	(Optional) Maximum metric value for LSAs. The configurable range is from 1 to 16777215. The default value is 16711680.																
include-stub	(Optional) Configures the router to advertise the maximum metric for stub links in router LSAs.																
on-startup	(Optional) Configures the router to advertise a maximum metric at startup.																
seconds	(Optional) Maximum metric value for the specified time interval. The configurable range is from 5 to 86400 seconds. There is no default timer value for this configuration option.																
wait-for-bgp	(Optional) Configures the router to advertise a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.																
summary-lsa	(Optional) Configures the router to override the summary LSA metric with the maximum metric value.																

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>The following is sample output from the <code>show ip ospf</code> command when entered without a specific OSPF process ID:</p> <pre> Router# show ip ospf Routing Process "ospf 201" with ID 10.0.0.1 and Domain ID 10.20.0.1 Supports only single IOS(IOS0) routes Supports opaque LSA SPF schedule delay 5 secs, Hold time between two SPFs 10 secs Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs LSA group pacing timer 100 secs Interface flood pacing timer 55 msec Retransmission pacing timer 100 msec Number of external LSA 0. Checksum Sum 0x0 Number of opaque AS LSA 0. Checksum Sum 0x0 Number of DCbitless external and opaque AS LSA 0 Number of DoNotAge external and opaque AS LSA 0 Number of areas in this router is 2. 2 normal 0 stub 0 nssa External flood list length 0 Area BACKBONE(0) Number of interfaces in this area is 2 Area has message digest authentication SPF algorithm executed 4 times Area ranges are Number of LSA 4. Checksum Sum 0x29BEB Number of opaque link LSA 0. Checksum Sum 0x0 Number of DCbitless LSA 3 Number of indication LSA 0 Number of DoNotAge LSA 0 Flood list length 0 Area 172.16.26.0 Number of interfaces in this area is 0 Area has no authentication SPF algorithm executed 1 times Area ranges are 192.168.0.0/16 Passive Advertise Number of LSA 1. Checksum Sum 0x44FD Number of opaque link LSA 0. Checksum Sum 0x0 Number of DCbitless LSA 1 Number of indication LSA 1 Number of DoNotAge LSA 0 Flood list length 0 </pre> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 174.</p>	<pre> switch# show ip ospf Routing Process "ospf 1" with ID 10.168.103.1 Supports opaque LSA Maximum number of LSA allowed 12000 Threshold for warning message 75% Ignore-time 5 minutes, reset-time 5 minutes Ignore-count allowed 5, current 0 It is an area border router Hold time between two consecutive SPFs 5000 msec SPF algorithm last executed 00:00:09 ago Minimum LSA interval 5 secs Minimum LSA arrival 1000 msec Number of external LSA 0. Checksum Sum 0x000000 Number of opaque AS LSA 0. Checksum Sum 0x000000 Number of LSA 27. Number of areas in this router is 3. 3 normal 0 stub 0 nssa Area BACKBONE(0.0.0.0) Number of interfaces in this area is 2 It is a normal area Area has no authentication SPF algorithm executed 153 times Number of LSA 8. Checksum Sum 0x03e13a Number of opaque link LSA 0. Checksum Sum 0x000000 Area 0.0.0.2 Number of interfaces in this area is 1 It is a normal area Area has no authentication SPF algorithm executed 153 times Number of LSA 11. Checksum Sum 0x054e57 Number of opaque link LSA 0. Checksum Sum 0x000000 Area 0.0.0.3 Number of interfaces in this area is 1 It is a normal area Area has no authentication SPF algorithm executed 5 times Number of LSA 6. Checksum Sum 0x02a401 Number of opaque link LSA 0. Checksum Sum 0x000000 </pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1391-1392.</p>

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		<p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1180; Arista User Manual, v. 4.11.1 (1/11/13), at 939; Arista User Manual v. 4.10.3 (10/22/12), at 775; Arista User Manual v. 4.9.3.2 (5/3/12), at 645; Arista User Manual v. 4.8.2 (11/18/11), at 480; Arista User Manual v. 4.7.3 (7/18/11), at 353; Arista User Manual v. 4.6.0 (12/22/2010), at 213.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>show ip ospf database</div> <p>To display lists of information related to the Open Shortest Path First (OSPF) database for a specific router, use the show ip ospf database command in EXEC mode.</p> <div>show ip ospf [process-id area-id] database</div> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 184</p> <table><tr><td>link-state-id</td><td><p>(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's LS type. It must be entered in the form of an IP address.</p><p>When the link state advertisement is describing a network, the link-state-id can take one of two forms:</p><p>The network's IP address (as in type 3 summary link advertisements and in autonomous system external link advertisements).</p><p>A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.)</p><p>When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID.</p><p>When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0).</p></td></tr></table> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 185.</p>	link-state-id	<p>(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's LS type. It must be entered in the form of an IP address.</p> <p>When the link state advertisement is describing a network, the link-state-id can take one of two forms:</p> <p>The network's IP address (as in type 3 summary link advertisements and in autonomous system external link advertisements).</p> <p>A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.)</p> <p>When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID.</p> <p>When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0).</p>	<div>show ip ospf database <link-state details></div> <p>The show ip ospf database <link-state details> command displays details of the specified link state advertisements (LSAs). The switch can return link state data about a single area or for all areas on the switch.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <div>show ip ospf [AREA] database LINKSTATE_TYPE linkstate_id [ROUTER] [VRF_INSTANCE]</div> <p>...</p> <ul style="list-style-type: none"><div>linkstate_id</div> Network segment described by the LSA (dotted decimal notation). <div>Value depends on the LSA type.</div> <ul style="list-style-type: none">When the LSA describes a network, the linkstate-id argument is one of the following:<ul style="list-style-type: none">The network IP address, as in Type 3 summary link advertisements and in autonomous system external link advertisements.A derived address obtained from the link state ID. Masking a network links the advertisement link state ID with the network subnet mask yielding the network IP address.When the LSA describes a router, the link state ID is the OSPFv2 router ID of the router.When an autonomous system external advertisement (Type 5) describes a default route, its link state ID is set to the default destination (0.0.0.0). <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1454.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1404; Arista User Manual v. 4.12.3 (7/17/13), at 1240; Arista User Manual, v. 4.11.1 (1/11/13), at 996; Arista User Manual v. 4.10.3 (10/22/12), at 825; Arista User Manual v. 4.9.3.2 (5/3/12), at 647; Arista User Manual v. 4.8.2 (11/18/11), at 483; Arista User Manual v. 4.7.3 (7/18/11), at 357; Arista User Manual v. 4.6.0 (12/22/2010), at 217.</p>
	link-state-id	<p>(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's LS type. It must be entered in the form of an IP address.</p> <p>When the link state advertisement is describing a network, the link-state-id can take one of two forms:</p> <p>The network's IP address (as in type 3 summary link advertisements and in autonomous system external link advertisements).</p> <p>A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.)</p> <p>When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID.</p> <p>When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0).</p>		

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>show ip ospf interface</div><div>To display interface information related to Open Shortest Path First (OSPF), use the <code>show ip ospf interface</code> command in user EXEC or privileged EXEC mode.</div><div>show ip [ospf] [process-id] interface [type number] [brief] [multicast] [topology {topology-name} base]</div><div><div>Syntax Description</div><table><tr><td>process-id</td><td>(Optional) Process ID number. If this argument is included, only information for the specified routing process is included. The range is 1 to 65535.</td></tr><tr><td>type</td><td>(Optional) Interface type. If the <i>type</i> argument is included, only information for the specified interface type is included.</td></tr><tr><td>number</td><td>(Optional) Interface number. If the <i>number</i> argument is included, only information for the specified interface number is included.</td></tr><tr><td>brief</td><td>(Optional) Displays brief overview information for OSPF interfaces, states, addresses and masks, and areas on the device.</td></tr></table></div></div>	process-id	(Optional) Process ID number. If this argument is included, only information for the specified routing process is included. The range is 1 to 65535.	type	(Optional) Interface type. If the <i>type</i> argument is included, only information for the specified interface type is included.	number	(Optional) Interface number. If the <i>number</i> argument is included, only information for the specified interface number is included.	brief	(Optional) Displays brief overview information for OSPF interfaces, states, addresses and masks, and areas on the device.	<div><div>show ip ospf interface brief</div><div>The <code>show ip ospf interface brief</code> command displays a summary of OSPFv2 interfaces, states, addresses and masks, and areas on the router..</div><div><div>Platformall</div><div>Command ModeEXEC</div><div>Command Syntax</div><div>show ip ospf [PROCESS ID] interface brief [VRF_INSTANCE]</div></div></div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1458.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1244; Arista User Manual, v. 4.11.1 (1/11/13), at 1000; Arista User Manual v. 4.10.3 (10/22/12), at 829; Arista User Manual v. 4.9.3.2 (5/3/12), at 653; Arista User Manual v. 4.8.2 (11/18/11), at 488; Arista User Manual v. 4.7.3 (7/18/11), at 360.</div>
	process-id	(Optional) Process ID number. If this argument is included, only information for the specified routing process is included. The range is 1 to 65535.								
	type	(Optional) Interface type. If the <i>type</i> argument is included, only information for the specified interface type is included.								
number	(Optional) Interface number. If the <i>number</i> argument is included, only information for the specified interface number is included.									
brief	(Optional) Displays brief overview information for OSPF interfaces, states, addresses and masks, and areas on the device.									
	Cisco IOS IP Routing:OSPF Command Reference (2013), at 202.									

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>shutdown (router OSPF)</div> <p>To initiate a graceful shutdown of the Open Shortest Path First (OSPF) protocol under the current instance, use the <code>shutdown</code> command in router configuration mode. To restart the OSPF protocol, use the <code>no shutdown</code> of this command.</p> <div><code>shutdown</code> <code>no shutdown</code></div> <p>Syntax Description This command has no arguments or keywords.</p> <p>Command Default OSPF stays active under the current instance.</p> <p>Command Modes Router configuration (config-router)</p> <table><tr><th>Release</th><th>Modification</th></tr><tr><td>12.2(33)SRC</td><td>This command was introduced.</td></tr><tr><td>15.0(1)M</td><td>This command was integrated into Cisco IOS Release 15.0(1)M.</td></tr></table> <p>Usage Guidelines Use the <code>shutdown</code> command in router configuration mode to temporarily shut down a protocol in the least disruptive manner and to notify its neighbors that it is going away. All traffic that has another path through the network will be directed to that alternate path.</p> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 252</p>	Release	Modification	12.2(33)SRC	This command was introduced.	15.0(1)M	This command was integrated into Cisco IOS Release 15.0(1)M.	<div>shutdown (OSPFv2)</div> <p>The <code>shutdown</code> command disables OSPFv2 on the switch. Neighbor routers are notified of the shutdown and all traffic that has another path through the network will be directed to an alternate path.</p> <p>OSPFv2 is disabled on individual interfaces with the <code>shutdown (OSPFv2)</code> command.</p> <p>The <code>no shutdown</code> and <code>default shutdown</code> commands enable the OSPFv2 instance by removing the shutdown statement from the OSPF block in <i>running-config</i>.</p> <p>Platform all</p> <p>Command Mode Router-OSPF Configuration</p> <p>Command Syntax</p> <div><code>shutdown</code> <code>no shutdown</code> <code>default shutdown</code></div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1468</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1253; Arista User Manual, v. 4.11.1 (1/11/13), at 1005; Arista User Manual v. 4.10.3 (10/22/12), at 834; Arista User Manual v. 4.9.3.2 (5/3/12), at 658; Arista User Manual v. 4.8.2 (11/18/11), at 493; Arista User Manual v. 4.7.3 (7/18/11), at 365; Arista User Manual v. 4.6.0 (12/22/2010), at 224</p>
	Release	Modification						
12.2(33)SRC	This command was introduced.							
15.0(1)M	This command was integrated into Cisco IOS Release 15.0(1)M.							

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>timers lsa arrival</p> <p>To set the minimum interval at which the software accepts the same link-state advertisement (LSA) from Open Shortest Path First (OSPF) neighbors, use the timers lsa arrival command in router configuration mode. To restore the default value, use the no form of this command.</p> <p>timers lsa arrival <i>milliseconds</i> no timers lsa arrival</p> <table border="1"> <tr> <td data-bbox="310 483 428 500">Syntax Description</td><td data-bbox="453 488 533 505"><i>milliseconds</i></td><td data-bbox="779 488 1087 561">Minimum delay in milliseconds that must pass between acceptance of the same LSA arriving from neighbors. The range is from 0 to 600,000 milliseconds. The default is 1000 milliseconds.</td></tr> </table> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 286.</p>	Syntax Description	<i>milliseconds</i>	Minimum delay in milliseconds that must pass between acceptance of the same LSA arriving from neighbors. The range is from 0 to 600,000 milliseconds. The default is 1000 milliseconds.	<p>timers lsa arrival (OSPFv2)</p> <p>The timers lsa arrival command sets the minimum interval in which the switch accepts the same link-state advertisement (LSA) from OSPF neighbors.</p> <p>The no timers lsa arrival and default timers lsa arrival commands restore the default maximum OSPFv2 path calculation interval to five seconds by removing the timers lsa arrival command from <i>running-config</i>.</p> <p>Platform all Command Mode Router-OSPF Configuration</p> <p>Command Syntax</p> <p>timers lsa arrival <i>lsa_time</i> no timers lsa arrival default timers lsa arrival</p> <p>Parameters</p> <ul style="list-style-type: none"> <i>lsa_time</i> OSPFv2 minimum interval (seconds). Values range from 1 to 600000 milliseconds. Default is 1000 milliseconds. <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1469.</p>
Syntax Description	<i>milliseconds</i>	Minimum delay in milliseconds that must pass between acceptance of the same LSA arriving from neighbors. The range is from 0 to 600,000 milliseconds. The default is 1000 milliseconds.			

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>timers basic (RIP)</p> <p>To adjust Routing Information Protocol (RIP) network timers, use the timers basic command in router configuration mode. To restore the default timers, use the no form of this command.</p> <p>timers basic <i>update invalid holddown flush</i> no timers basic</p> <table border="1"> <tr> <td data-bbox="300 459 420 475">Syntax Description</td><td data-bbox="443 459 489 475"><i>update</i></td><td data-bbox="772 459 1087 516">Rate (in seconds) at which updates are sent. This is the fundamental timing parameter of the routing protocol. The default is 30 seconds.</td></tr> <tr> <td></td><td data-bbox="443 532 489 548"><i>invalid</i></td><td data-bbox="772 532 1087 695">Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when there is an absence of updates that refresh the route. The route then enters into a <i>holddown</i> state. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. The default is 180 seconds.</td></tr> </table> <p>Cisco IOS IP Routing:RIP Command Reference (2013), at 56.</p>	Syntax Description	<i>update</i>	Rate (in seconds) at which updates are sent. This is the fundamental timing parameter of the routing protocol. The default is 30 seconds.		<i>invalid</i>	Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when there is an absence of updates that refresh the route. The route then enters into a <i>holddown</i> state. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. The default is 180 seconds.	<p>timers basic (RIP)</p> <p>The timers basic command configures the update interval, the expiration time, and the deletion time for routes received and sent through RIP. The command requires value declaration of all values.</p> <ul style="list-style-type: none"> The update time is the interval between unsolicited route responses. The default is 30 seconds. The expiration time is initialized when a route is established and any time an update is received for the route. If the specified period elapses from the last time the route update was received, then the route is marked as inaccessible and advertised as unreachable. However, the route forwards packets until the deletion time expires. The default value is 180 seconds. The deletion time is initialized when the expiration time has elapsed. On initialization of the deletion time, the route is no longer valid; however, it is retained in the routing table for a short time so that neighbors can be notified that the route has been dropped. Upon expiration of the deletion time, the route is removed from the routing table. The default is 120 seconds. <p>The no timers basic and default timers basic commands return the timer values to their default values by removing the timers-basic command from <i>running-config</i>.</p> <p>Platform all Command Mode Router-RIP Configuration</p> <p>Command Syntax</p> <p>timers basic <i>update_time expire_time deletion_time</i> no timers basic default timers basic</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1671.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1621; Arista User Manual v. 4.12.3 (7/17/13), at 1433; Arista User Manual, v. 4.11.1 (1/11/13), at 1179; Arista User Manual v. 4.10.3 (10/22/12), at 989; Arista User Manual v. 4.9.3.2 (5/3/12), at 748; Arista User Manual v. 4.8.2 (11/18/11), at 570.</p>
Syntax Description	<i>update</i>	Rate (in seconds) at which updates are sent. This is the fundamental timing parameter of the routing protocol. The default is 30 seconds.						
	<i>invalid</i>	Interval of time (in seconds) after which a route is declared invalid; it should be at least three times the value of the <i>update</i> argument. A route becomes invalid when there is an absence of updates that refresh the route. The route then enters into a <i>holddown</i> state. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets. The default is 180 seconds.						

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>distance (IPv6 EIGRP)</p> <p>To allow the use of two administrative distances--internal and external--that could be a better route to a node, use the <code>distance</code> command in router configuration mode. To reset these values to their defaults, use the <code>no distance</code> command.</p> <p><code>distance</code> <i>internal-distance external-distance</i> <code>no distance</code></p> <table border="1"> <tr> <td data-bbox="304 483 430 500">Syntax Description</td><td data-bbox="451 492 562 508"><i>internal-distance</i></td><td data-bbox="787 492 1108 584">Administrative distance for Enhanced Internal Gateway Routing Protocol (EIGRP) for IPv6 internal routes. Internal routes are those that are learned from another entity within the same autonomous system. The distance can be a value from 1 to 255.</td></tr> <tr> <td></td><td data-bbox="451 600 562 617"><i>external-distance</i></td><td data-bbox="787 600 1108 693">Administrative distance for EIGRP for IPv6 external routes. External routes are those for which the best path is learned from a neighbor external to the autonomous system. The distance can be a value from 1 to 255.</td></tr> </table> <p>Cisco IOS IP Routing: EIGRP Command Reference (2013), at 42.</p>	Syntax Description	<i>internal-distance</i>	Administrative distance for Enhanced Internal Gateway Routing Protocol (EIGRP) for IPv6 internal routes. Internal routes are those that are learned from another entity within the same autonomous system. The distance can be a value from 1 to 255.		<i>external-distance</i>	Administrative distance for EIGRP for IPv6 external routes. External routes are those for which the best path is learned from a neighbor external to the autonomous system. The distance can be a value from 1 to 255.	<p>distance bgp</p> <p>The <code>distance bgp</code> command assigns an administrative distance to routes that the switch learns through BGP. Routers use administrative distances to select a route when two protocols provide routing information to the same destination. Distance values range from 1 to 255; lower distance values correspond to higher reliability. BGP routing tables do not include routes with a distance of 255.</p> <p>The <code>distance</code> command assigns distance values to external, internal, and local BGP routes:</p> <ul style="list-style-type: none"> external: External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Default distance is 200. internal: Internal routes are routes learned from a BGP entity within the same autonomous system. Default distance is 200. local: Local routes are networks listed with a network router configuration command for that router or for networks that are redistributed from another process. Default distance is 200. <p>The <code>no distance bgp</code> and <code>default distance bgp</code> commands restore the default administrative distances by removing the <code>distance bgp</code> command from <i>running-config</i>.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p><code>distance bgp external_dist [INTERNAL_LOCAL]</code> <code>no distance bgp</code> <code>default distance bgp</code></p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1583.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1360; Arista User Manual, v. 4.11.1 (1/11/13), at 1106; Arista User Manual v. 4.10.3 (10/22/12), at 918; Arista User Manual v. 4.9.3.2 (5/3/12), at 684; Arista User Manual v. 4.8.2 (11/18/11), at 514; Arista User Manual v. 4.7.3 (7/18/11), at 379.</p>
Syntax Description	<i>internal-distance</i>	Administrative distance for Enhanced Internal Gateway Routing Protocol (EIGRP) for IPv6 internal routes. Internal routes are those that are learned from another entity within the same autonomous system. The distance can be a value from 1 to 255.						
	<i>external-distance</i>	Administrative distance for EIGRP for IPv6 external routes. External routes are those for which the best path is learned from a neighbor external to the autonomous system. The distance can be a value from 1 to 255.						

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Extended community attributes are used to configure, filter, and identify routes for virtual routing and forwarding instances (VRFs) and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs). The match extcommunity command is used to configure match clauses that use extended community attributes in route maps. All of the standard rules of match and set clauses apply to the configuration of extended community attributes.</p> <p>Cisco IOS IP Routing: EIGRP Command Reference (2013), at 130.</p>	<p>BGP extended communities configure, filter, and identify routes for virtual routing, forwarding instances (VRFs), and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs). Extended community clauses provide route target and site of origin parameter options:</p> <ul style="list-style-type: none"> • route targets (rt): This attribute identifies a set of sites and VRFs that may receive routes tagged with the configured route target. Configuring this attribute with a route allows that route to be placed in per-site forwarding tables that route traffic received from corresponding sites. • site of origin (soo): This attribute identifies the site from where the Provider Edge (PE) router learns the route. All routes learned from a specific site have the same SOO extended community attribute, whether a site is connected to a single or multiple PE routers. This attribute prevents routing loops resulting from multihomed sites. The SOO attribute is configured on the interface and propagated into a BGP domain by redistribution. The SOO is applied to routes learned from VRFs. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1552.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1502; Arista User Manual v. 4.12.3 (7/17/13), at 1334; Arista User Manual, v. 4.11.1 (1/11/13), at 1083-84; Arista User Manual v. 4.10.3 (10/22/12), at 896; Arista User Manual v. 4.9.3.2 (5/3/12), at 668; Arista User Manual v. 4.8.2 at 500.</p>
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>shutdown (address-family)</p> <p>To disable the Enhanced Interior Gateway Routing Protocol (EIGRP) address-family protocol for a specific routing instance without removing any existing address-family configuration parameters, use the shutdown command in the appropriate configuration mode. To reenab the EIGRP address-family protocol, use the no form of this command.</p> <p>Cisco IOS IP Routing: EIGRP Command Reference (2013), at 276.</p>	<p>29.3.4 Disabling IS-IS</p> <p>The IS-IS protocol can be disabled globally on on individual interfaces.</p> <p>The shutdown (IS-IS) command disables the IS-IS protocol for a specific routing instance without removing any existing IS-IS configuration parameters.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1679.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1440.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>maximum-paths</div>	<div>Controls the maximum number of parallel routes an IP routing protocol can support.</div>	<div>maximum-paths (OSPFv2)</div> <div>The maximum-paths command controls the maximum number of parallel routes that OSPFv2 supports on the switch. The default maximum is 16 paths.</div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1440.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1226; Arista User Manual, v. 4.11.1 (1/11/13), at 983; Arista User Manual v. 4.10.3 (10/22/12), at 813; Arista User Manual v. 4.9.3.2 (5/3/12), at 637; Arista User Manual v. 4.8.2 (11/18/11), at 472.</div>
	Cisco IOS IP Routing: BGP Command Reference (2013), at 375.		
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<div>maximum-paths</div>	<div>Controls the maximum number of parallel routes an IP routing protocol can support.</div>	<div>maximum-paths (OSPFv2)</div> <div>The maximum-paths command controls the maximum number of parallel routes that OSPFv2 supports on the switch. The default maximum is 16 paths.</div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1440.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1226; Arista User Manual, v. 4.11.1 (1/11/13), at 983; Arista User Manual v. 4.10.3 (10/22/12), at 813; Arista User Manual v. 4.9.3.2 (5/3/12), at 637; Arista User Manual v. 4.8.2 (11/18/11), at 472.</div>
	Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 146.		

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Together, a route reflector and its clients form a <i>cluster</i>. When a single route reflector is deployed in a cluster, the cluster is identified by the router ID of the route reflector.</p> <p>The bgp cluster-id command is used to assign a cluster ID to a route reflector when the cluster has one or more route reflectors. Multiple route reflectors are deployed in a cluster to increase redundancy and avoid a single point of failure. When multiple route reflectors are configured in a cluster, the same cluster ID is assigned to all route reflectors. This allows all route reflectors in the cluster to recognize updates from peers in the same cluster and reduces the number of updates that need to be stored in BGP routing tables.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 74.</p>	<p>When using route reflectors, an AS is divided into clusters. A cluster consists of one or more route reflectors and a group of clients to which they re-advertise route information. Multiple route reflectors can be configured in the same cluster to increase redundancy and avoid a single point of failure. Each route reflector has a cluster ID. If the cluster has a single route reflector, the cluster ID is its router ID. If a cluster has multiple route reflectors, a 4-byte cluster ID is assigned to all route reflectors in the cluster. All of them must be configured with the same cluster ID so that they can recognize updates from other route reflectors in the same cluster. The bgp cluster-id command configures the cluster ID in a cluster with multiple route reflectors.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1549.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1331; Arista User Manual, v. 4.11.1 (1/11/13), at 1081; Arista User Manual v. 4.10.3 (10/22/12), at 893; Arista User Manual v. 4.9.3.2 (5/3/12), at 665.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Together, a route reflector and its clients form a <i>cluster</i>. When a single route reflector is deployed in a cluster, the cluster is identified by the router ID of the route reflector.</p> <p>The bgp cluster-id command is used to assign a cluster ID to a route reflector when the cluster has one or more route reflectors. Multiple route reflectors are deployed in a cluster to increase redundancy and avoid a single point of failure. When multiple route reflectors are configured in a cluster, the same cluster ID is assigned to all route reflectors. This allows all route reflectors in the cluster to recognize updates from peers in the same cluster and reduces the number of updates that need to be stored in BGP routing tables.</p> <p>Cisco IOS IP Routing Protocols Command Reference (July 16, 2005), at 25.</p>	<p>When using route reflectors, an AS is divided into clusters. A cluster consists of one or more route reflectors and a group of clients to which they re-advertise route information. Multiple route reflectors can be configured in the same cluster to increase redundancy and avoid a single point of failure. Each route reflector has a cluster ID. If the cluster has a single route reflector, the cluster ID is its router ID. If a cluster has multiple route reflectors, a 4-byte cluster ID is assigned to all route reflectors in the cluster. All of them must be configured with the same cluster ID so that they can recognize updates from other route reflectors in the same cluster. The bgp cluster-id command configures the cluster ID in a cluster with multiple route reflectors.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1549.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1331; Arista User Manual, v. 4.11.1 (1/11/13), at 1081; Arista User Manual v. 4.10.3 (10/22/12), at 893; Arista User Manual v. 4.9.3.2 (5/3/12), at 665.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>The bgp confederation identifier command is used to configure a single autonomous system number to identify a group of smaller autonomous systems as a single confederation.</p> <p>A confederation can be used to reduce the internal BGP (iBGP) mesh by dividing a large single autonomous system into multiple subautonomous systems and then grouping them into a single confederation. The subautonomous systems within the confederation exchange routing information like iBGP peers. External peers interact with the confederation as if it were a single autonomous system.</p> <p>Each subautonomous system is fully meshed within itself and has a few connections to other autonomous systems within the confederation. Next hop, Multi Exit Discriminator (MED), and local preference information is preserved throughout the confederation, allowing you to retain a single Interior Gateway Protocol (IGP) for all the autonomous systems.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 77</p>	<p>BGP Confederations</p> <p>BGP confederations allow you to break an autonomous system into multiple sub-autonomous systems, and then to group the sub-autonomous systems as a confederation.</p> <p>The sub-autonomous systems exchange routing information as if they are iBGP peers. Specifically, routing updates between sub-autonomous systems include the next-hop, local-preference and MED attributes.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1556.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1326.</p>				
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>bgp redistribute-internal</p> <p>To configure iBGP redistribution into an interior gateway protocol (IGP), such as IS-IS or OSPF, use the bgp redistribute-internal command in address family or router configuration mode. To stop iBGP redistribution into IGPs, use the no form of this command.</p> <p>bgp redistribute-internal no bgp redistribute-internal</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 133</p>	<p>bgp redistribute-internal (BGP)</p> <p>The bgp redistribute-internal command enables iBGP redistribution into an interior gateway protocol (IGP), such as IS-IS or OSPF in address family or router BGP configuration mode.</p> <p>The no bgp redistribute-internal and default bgp redistribute-internal commands disable route redistribution from the specified domain by removing the corresponding bgp redistribute-internal command from <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-BGP Configuration Router-BGP Configuration-Address-Family</td></tr></table> <p>Command Syntax</p> <p>bgp redistribute internal no bgp redistribute internal default bgp redistribute internal</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1576.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1357.</p>	Platform	all	Command Mode	Router-BGP Configuration Router-BGP Configuration-Address-Family
Platform	all					
Command Mode	Router-BGP Configuration Router-BGP Configuration-Address-Family					

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>bgp router-id</div> <div>To configure a fixed router ID for the local Border Gateway Protocol (BGP) routing process, use the bgp router-id command in router or address family configuration mode. To remove the fixed router ID from the running configuration file and restore the default router ID selection, use the no form of this command.</div> <div>Router Configuration</div> <div>bgp router-id {ip-address vrf auto-assign}</div> <div>no bgp router-id [vrf auto-assign]</div> <div>Address Family Configuration</div> <div>bgp router-id {ip-address auto-assign}</div> <div>no bgp router-id</div> <div>Syntax Description</div> <table><tr><td>ip-address</td><td>Router identifier in the form of an IP address.</td></tr><tr><td>vrf</td><td>Configures a router identifier for a Virtual Routing and Forwarding (VRF) instance.</td></tr><tr><td>auto-assign</td><td>Automatically assigns a router identifier for each VRF.</td></tr></table> <div>Command Default</div> <div>The following behavior determines local router ID selection when this command is not enabled:<ul style="list-style-type: none">• If a loopback interface is configured, the router ID is set to the IP address of the loopback interface. If multiple loopback interfaces are configured, the router ID is set to the IP address of the loopback interface with the highest IP address.• If no loopback interface is configured, the router ID is set to the highest IP address on a physical interface.</div> <div>Cisco IOS IP Routing: BGP Command Reference (2013), at 142.</div>	ip-address	Router identifier in the form of an IP address.	vrf	Configures a router identifier for a Virtual Routing and Forwarding (VRF) instance.	auto-assign	Automatically assigns a router identifier for each VRF.	<div>router-id (BGP)</div> <div>The router-id command configures a fixed router ID for the local Border Gateway Protocol (BGP) routing process.</div> <div>When the router-id command is not configured, the local router ID is set to the following:<ul style="list-style-type: none">• The loopback IP address when a loopback interface is configured.• The loopback with the highest IP address is selected when multiple loopback interfaces are configured.• The highest IP address on a physical interface when no loopback interfaces are configured.</div> <div>Important The router-id must be specified if the switch has no IPv4 addresses configured.</div> <div>The no router-id and default router-id commands remove the router-id command from running-config.</div> <div>Platform all</div> <div>Command Mode Router-BGP Configuration</div> <div>Command Syntax</div> <div>router-id id_num</div> <div>no router-id [id_num]</div> <div>default router-id [id_num]</div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1625.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1397; Arista User Manual, v. 4.11.1 (1/11/13), at 1143; Arista User Manual v. 4.10.3 (10/22/12), at 954; Arista User Manual v. 4.9.3.2 (5/3/12), at 716.</div>
	ip-address	Router identifier in the form of an IP address.						
	vrf	Configures a router identifier for a Virtual Routing and Forwarding (VRF) instance.						
auto-assign	Automatically assigns a router identifier for each VRF.							

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Cisco IOS 12.4 Effective date of registration: 8/12/2005	<p>bgp router-id</p> <p>To configure a fixed router ID for the local Border Gateway Protocol (BGP) routing process, use the bgp router-id command in router configuration mode. To remove the fixed router ID from the running configuration file and restore the default router ID selection, use the no form of this command.</p> <p>bgp router-id <i>ip-address</i></p> <p>no bgp router-id <i>ip-address</i></p> <table><tr><td>Syntax Description</td><td><i>ip-address</i> IP address of the router.</td></tr></table> <table><tr><td>Defaults</td><td>The following behavior determines local router ID selection when this command is not enabled:<ul style="list-style-type: none">If a loopback interface is configured, the router ID is set to the IP address of the loopback. If multiple loopback interfaces are configured, the loopback with the highest IP address is used.If no loopback interface is configured, the router ID is set to the highest IP address on a physical interface.</td></tr></table> <p>Cisco IOS IP Routing Protocols Command Reference (July 16, 2005), at 55.</p>	Syntax Description	<i>ip-address</i> IP address of the router.	Defaults	The following behavior determines local router ID selection when this command is not enabled: <ul style="list-style-type: none">If a loopback interface is configured, the router ID is set to the IP address of the loopback. If multiple loopback interfaces are configured, the loopback with the highest IP address is used.If no loopback interface is configured, the router ID is set to the highest IP address on a physical interface.	<p>router-id (BGP)</p> <p>The router-id command configures a fixed router ID for the local Border Gateway Protocol (BGP) routing process.</p> <p>When the router-id command is not configured, the local router ID is set to the following:</p> <ul style="list-style-type: none">The loopback IP address when a loopback interface is configured.The loopback with the highest IP address is selected when multiple loopback interfaces are configured.The highest IP address on a physical interface when no loopback interfaces are configured. <p>Important The router-id must be specified if the switch has no IPv4 addresses configured.</p> <p>The no router-id and default router-id commands remove the router-id command from <i>running-config</i>.</p> <p>Platform all</p> <p>Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <pre>router-id id_num no router-id [id_num] default router-id [id_num]</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1625.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1397; Arista User Manual, v. 4.11.1 (1/11/13), at 1143; Arista User Manual v. 4.10.3 (10/22/12), at 954; Arista User Manual v. 4.9.3.2 (5/3/12), at 716.</p>
	Syntax Description	<i>ip-address</i> IP address of the router.				
Defaults	The following behavior determines local router ID selection when this command is not enabled: <ul style="list-style-type: none">If a loopback interface is configured, the router ID is set to the IP address of the loopback. If multiple loopback interfaces are configured, the loopback with the highest IP address is used.If no loopback interface is configured, the router ID is set to the highest IP address on a physical interface.					

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>The clear ip bgp command can be used to initiate a hard reset or soft reconfiguration. A hard reset tears down and rebuilds the specified peering sessions and rebuilds the BGP routing tables. A soft reconfiguration uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. Soft reconfiguration uses stored update information, at the cost of additional memory for storing the updates, to allow you to apply new BGP policy without disrupting the network. Soft reconfiguration can be configured for inbound or outbound sessions.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 193</p>	<p>clear ip bgp</p> <p>The clear ip bgp command removes BGP IPv4 learned routes from the routing table, reads all routes from designated peers, and sends routes to those peers as required.</p> <ul style="list-style-type: none"> a hard reset tears down and rebuilds the peering sessions and rebuilds BGP routing tables. a soft reset uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. <p>Soft resets use stored update information to apply new BGP policy without disrupting the network.</p> <p>Routes that are read or sent are processed through modified route maps or AS-path access lists. The command can also clear the switch's BGP sessions with its peers.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) 10/2/2014), at 1577.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1527; Arista User Manual v. 4.12.3 (7/17/13), at 1358; Arista User Manual, v. 4.11.1 (1/11/13), at 1104; Arista User Manual v. 4.10.3 (10/22/12), at 916; Arista User Manual v. 4.9.3.2 (5/3/12), at 683; Arista User Manual v. 4.8.2 (11/18/11), at 513; Arista User Manual v. 4.7.3 (7/18/11), at 378.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>The clear ip bgp command can be used to initiate a hard reset or soft reconfiguration. A hard reset tears down and rebuilds the specified peering sessions and rebuilds the BGP routing tables. A soft reconfiguration uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. Soft reconfiguration uses stored update information, at the cost of additional memory for storing the updates, to allow you to apply new BGP policy without disrupting the network. Soft reconfiguration can be configured for inbound or outbound sessions.</p> <p>Cisco IOS IP Routing Protocols Command Reference (July 16, 2005), at 72-73.</p>	<p>clear ip bgp</p> <p>The clear ip bgp command removes BGP IPv4 learned routes from the routing table, reads all routes from designated peers, and sends routes to those peers as required.</p> <ul style="list-style-type: none"> a hard reset tears down and rebuilds the peering sessions and rebuilds BGP routing tables. a soft reset uses stored prefix information to reconfigure and activate BGP routing tables without tearing down existing peering sessions. <p>Soft resets use stored update information to apply new BGP policy without disrupting the network.</p> <p>Routes that are read or sent are processed through modified route maps or AS-path access lists. The command can also clear the switch's BGP sessions with its peers.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) 10/2/2014), at 1577.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1527; Arista User Manual v. 4.12.3 (7/17/13), at 1358; Arista User Manual, v. 4.11.1 (1/11/13), at 1104; Arista User Manual v. 4.10.3 (10/22/12), at 916; Arista User Manual v. 4.9.3.2 (5/3/12), at 683; Arista User Manual v. 4.8.2 (11/18/11), at 513; Arista User Manual v. 4.7.3 (7/18/11), at 378.</p>

Copyright Registration Information	Cisco	Arista												
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>distance bgp</div> <p>To configure the administrative distance for BGP routes, use the <code>distance bgp</code> command in address family or router configuration mode. To return to the administrative distance to the default value, use the <code>no</code> form of this command.</p> <div>distance bgp external-distance internal-distance local-distance no distance bgp</div> <div><table><tr><td>Syntax</td><td>Description</td></tr><tr><td>external-distance</td><td>Administrative distance for external BGP routes. Routes are external when learned from an external autonomous system. The range of values for this argument are from 1 to 255.</td></tr><tr><td>internal-distance</td><td>Administrative distance for internal BGP routes. Routes are internal when learned from peer in the local autonomous system. The range of values for this argument are from 1 to 255.</td></tr><tr><td>local-distance</td><td>Administrative distance for local BGP routes. Local routes are those networks listed with a network router configuration command, often as back doors, for the router or for the networks that is being redistributed from another process. The range of values for this argument are from 1 to 255.</td></tr></table></div> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 271.</p>	Syntax	Description	external-distance	Administrative distance for external BGP routes. Routes are external when learned from an external autonomous system. The range of values for this argument are from 1 to 255.	internal-distance	Administrative distance for internal BGP routes. Routes are internal when learned from peer in the local autonomous system. The range of values for this argument are from 1 to 255.	local-distance	Administrative distance for local BGP routes. Local routes are those networks listed with a network router configuration command, often as back doors, for the router or for the networks that is being redistributed from another process. The range of values for this argument are from 1 to 255.	<div>distance bgp</div> <p>The <code>distance bgp</code> command assigns an administrative distance to routes that the switch learns through BGP. Routers use administrative distances to select a route when two protocols provide routing information to the same destination. Distance values range from 1 to 255; lower distance values correspond to higher reliability. BGP routing tables do not include routes with a distance of 255.</p> <p>The distance command assigns distance values to external, internal, and local BGP routes:</p> <ul style="list-style-type: none"><code>external</code>: External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Default distance is 200.<code>internal</code>: Internal routes are routes learned from a BGP entity within the same autonomous system. Default distance is 200.<code>local</code>: Local routes are networks listed with a network router configuration command for that router or for networks that are redistributed from another process. Default distance is 200. <p>The <code>no distance bgp</code> and <code>default distance bgp</code> commands restore the default administrative distances by removing the <code>distance bgp</code> command from <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-BGP Configuration</td></tr></table> <p>Command Syntax</p> <div>distance bgp external_dist [INTERNAL_LOCAL] no distance bgp default distance bgp</div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1583.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1360; Arista User Manual, v. 4.11.1 (1/11/13), at 1106; Arista User Manual v. 4.10.3 (10/22/12), at 918; Arista User Manual v. 4.9.3.2 (5/3/12), at 684; Arista User Manual v. 4.8.2 (11/18/11), at 514; Arista User Manual v. 4.7.3 (7/18/11), at 379.</p>	Platform	all	Command Mode	Router-BGP Configuration
	Syntax	Description												
external-distance	Administrative distance for external BGP routes. Routes are external when learned from an external autonomous system. The range of values for this argument are from 1 to 255.													
internal-distance	Administrative distance for internal BGP routes. Routes are internal when learned from peer in the local autonomous system. The range of values for this argument are from 1 to 255.													
local-distance	Administrative distance for local BGP routes. Local routes are those networks listed with a network router configuration command, often as back doors, for the router or for the networks that is being redistributed from another process. The range of values for this argument are from 1 to 255.													
Platform	all													
Command Mode	Router-BGP Configuration													

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<div>Cisco IOS 12.4</div> <div>Effective date of registration: 8/12/2005</div>	<div><div>distance bgp</div><div>To configure the administrative distance for BGP routes, use the distance bgp command in address family or router configuration mode. To return to the administrative distance to the default value, use the no form of this command.</div><div><div>distance bgp external-distance internal-distance local-distance</div><div>no distance bgp</div></div><div><table><tr><td>Syntax</td><td>Description</td></tr><tr><td>external-distance</td><td>Administrative distance for external BGP routes. Routes are external when learned from an external autonomous system. The range of values for this argument are from 1 to 255.</td></tr><tr><td>internal-distance</td><td>Administrative distance for internal BGP routes. Routes are internal when learned from peer in the local autonomous system. The range of values for this argument are from 1 to 255.</td></tr><tr><td>local-distance</td><td>Administrative distance for local BGP routes. Local routes are those networks listed with a network router configuration command, often as back doors, for the router or for the networks that is being redistributed from another process. The range of values for this argument are from 1 to 255.</td></tr></table></div><div>Cisco IOS IP Routing Protocols Command Reference (July 16, 2005), at 95.</div></div>	Syntax	Description	external-distance	Administrative distance for external BGP routes. Routes are external when learned from an external autonomous system. The range of values for this argument are from 1 to 255.	internal-distance	Administrative distance for internal BGP routes. Routes are internal when learned from peer in the local autonomous system. The range of values for this argument are from 1 to 255.	local-distance	Administrative distance for local BGP routes. Local routes are those networks listed with a network router configuration command, often as back doors, for the router or for the networks that is being redistributed from another process. The range of values for this argument are from 1 to 255.	<div><div>distance bgp</div><div>The distance bgp command assigns an administrative distance to routes that the switch learns through BGP. Routers use administrative distances to select a route when two protocols provide routing information to the same destination. Distance values range from 1 to 255; lower distance values correspond to higher reliability. BGP routing tables do not include routes with a distance of 255.</div><div>The distance command assigns distance values to external, internal, and local BGP routes:</div><div><ul style="list-style-type: none">external: External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Default distance is 200.internal: Internal routes are routes learned from a BGP entity within the same autonomous system. Default distance is 200.local: Local routes are networks listed with a network router configuration command for that router or for networks that are redistributed from another process. Default distance is 200.</div><div>The no distance bgp and default distance bgp commands restore the default administrative distances by removing the distance bgp command from <i>running-config</i>.</div><div><div>Platformall</div><div>Command ModeRouter-BGP Configuration</div></div><div>Command Syntax<div><div>distance bgp external_dist [INTERNAL_LOCAL]</div><div>no distance bgp</div><div>default distance bgp</div></div></div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1583.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1360; Arista User Manual, v. 4.11.1 (1/11/13), at 1106; Arista User Manual v. 4.10.3 (10/22/12), at 918; Arista User Manual v. 4.9.3.2 (5/3/12), at 684; Arista User Manual v. 4.8.2 (11/18/11), at 514; Arista User Manual v. 4.7.3 (7/18/11), at 379.</div></div>
	Syntax	Description								
external-distance	Administrative distance for external BGP routes. Routes are external when learned from an external autonomous system. The range of values for this argument are from 1 to 255.									
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local-distance	Administrative distance for local BGP routes. Local routes are those networks listed with a network router configuration command, often as back doors, for the router or for the networks that is being redistributed from another process. The range of values for this argument are from 1 to 255.									

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Expanded Community Lists</p> <p>Expanded community lists are used to filter communities using a regular expression. Regular expressions are used to configure patterns to match community attributes. <u>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it will match the earliest part first.</u> For more information about configuring regular expressions, see the "Regular Expressions" appendix of the <i>Terminal Services Configuration Guide</i>.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 324.</p>	<p><u>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it matches the earliest part first.</u></p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 107.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 105; Arista User Manual v. 4.12.3 (7/17/13), at 95; Arista User Manual, v. 4.11.1 (1/11/13), at 65; Arista User Manual v. 4.10.3 (10/22/12), at 57; Arista User Manual v. 4.9.3.2 (5/3/12), at 53; Arista User Manual v. 4.8.2 (11/18/11), at 49.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Expanded Community Lists</p> <p>Expanded community lists are used to filter communities using a regular expression. Regular expressions are used to configure patterns to match community attributes. <u>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in.</u></p> <p><u>Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it will match the earliest part first.</u> For more information about configuring regular expressions, see the <i>Regular Expressions</i> appendix of the <i>Cisco IOS Terminal</i></p> <p>Cisco IOS IP Routing Protocols Command Reference (July 16, 2005), at 117-18.</p>	<p><u>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it matches the earliest part first.</u></p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 107.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 105; Arista User Manual v. 4.12.3 (7/17/13), at 95; Arista User Manual, v. 4.11.1 (1/11/13), at 65; Arista User Manual v. 4.10.3 (10/22/12), at 57; Arista User Manual v. 4.9.3.2 (5/3/12), at 53; Arista User Manual v. 4.8.2 (11/18/11), at 49.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>ip extcommunity-list</p> <p>To create an extended community list to configure Virtual Private Network (VPN) route filtering, use the ip extcommunity-list command in global configuration mode. To delete the extended community list, use the no form of this command.</p> <p>To enter IP Extended community-list configuration mode to create or configure an extended community-list, use the ip extcommunity-list command in global configuration mode. To delete the entire extended community list, use the no form of this command. To delete a single entry, use the no form in IP Extended community-list configuration mode.</p> <p>Global Configuration Mode CLI</p> <p>ip extcommunity-list {expanded-list [permit deny] [regular-expression]} expanded list-name [permit deny] [regular-expression] standard-list [permit deny] [rt value] [soo value] standard list-name [permit deny] [rt value] [soo value]}</p> <p>no ip extcommunity-list {expanded-list expanded list-name standard-list standard list-name}</p> <p>ip extcommunity-list {expanded-list expanded list-name standard-list standard list-name}</p> <p>no ip extcommunity-list {expanded-list expanded list-name standard-list standard list-name}</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 326</p>	<p>ip extcommunity-list standard</p> <p>The ip extcommunity-list standard command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs).</p> <ul style="list-style-type: none"> Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>The no ip extcommunity-list standard and default ip extcommunity-list standard commands delete the specified extended community list by removing the corresponding ip extcommunity-list standard statement from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>ip extcommunity-list standard listname FILTER_TYPE COMM_1 [COMM_2...COMM_n] no ip extcommunity-list standard listname default ip extcommunity-list standard listname</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1591.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1541; Arista User Manual v. 4.12.3 (7/17/13), at 1365; Arista User Manual, v. 4.11.1 (1/11/13), at 1111; Arista User Manual v. 4.10.3 (10/22/12), at 923; Arista User Manual v. 4.9.3.2 (5/3/12), at 690; Arista User Manual v. 4.8.2 (11/18/11), at 520.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>ip extcommunity-list</p> <p>To create an extended community list to configure Virtual Private Network (VPN) route filtering, use the ip extcommunity-list command in global configuration mode. To delete the extended community list, use the no form of this command.</p> <p>Global Configuration Mode CLI</p> <pre>ip extcommunity-list expanded-list / expanded list-name {permit deny} [regular-expression] / standard-list / standard list-name {permit deny} [rt value] [soo value]</pre> <pre>no ip extcommunity-list expanded-list / expanded list-name standard-list standard list-name</pre> <p>To enter IP extended community-list configuration mode to create or configure an extended community-list, use the ip extcommunity-list command in global configuration mode. To delete the entire extended community list, use the no form of this command. To delete a single entry, use the no form in IP Extended community-list configuration mode.</p> <pre>ip extcommunity-list expanded-list / expanded list-name standard-list standard list-name</pre> <pre>no ip extcommunity-list expanded-list / expanded list-name standard-list standard list-name</pre> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 116.</p>	<p>ip extcommunity-list standard</p> <p>The ip extcommunity-list standard command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs).</p> <ul style="list-style-type: none"> Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>The no ip extcommunity-list standard and default ip extcommunity-list standard commands delete the specified extended community list by removing the corresponding ip extcommunity-list standard statement from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <pre>ip extcommunity-list standard listname FILTER_TYPE COMM_1 [COMM_2...COMM_n]</pre> <pre>no ip extcommunity-list standard listname</pre> <pre>default ip extcommunity-list standard listname</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1591.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1541; Arista User Manual v. 4.12.3 (7/17/13), at 1365; Arista User Manual, v. 4.11.1 (1/11/13), at 1111; Arista User Manual v. 4.10.3 (10/22/12), at 923; Arista User Manual v. 4.9.3.2 (5/3/12), at 690; Arista User Manual v. 4.8.2 (11/18/11), at 520.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>ip extcommunity-list</p> <p>To create an extended community list to configure Virtual Private Network (VPN) route filtering, use the ip extcommunity-list command in global configuration mode. To delete the extended community list, use the no form of this command.</p> <p>To enter IP Extended community-list configuration mode to create or configure an extended community-list, use the ip extcommunity-list command in global configuration mode. To delete the entire extended community list, use the no form of this command. To delete a single entry, use the no form in IP Extended community-list configuration mode.</p> <p>Global Configuration Mode CLI</p> <p>ip extcommunity-list {expanded-list [permit deny] [regular-expression]} expanded list-name [permit deny] [regular-expression] standard-list [permit deny] [rt value] [soo value] standard list-name [permit deny] [rt value] [soo value]}</p> <p>no ip extcommunity-list {expanded-list expanded list-name standard-list standard list-name}</p> <p>ip extcommunity-list {expanded-list expanded list-name standard-list standard list-name}</p> <p>no ip extcommunity-list {expanded-list expanded list-name standard-list standard list-name}</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 326.</p>	<p>ip extcommunity-list expanded</p> <p>The ip extcommunity-list expanded command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs). The command uses regular expressions to name the communities specified by the list.</p> <ul style="list-style-type: none"> Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>The no ip extcommunity-list expanded and default ip extcommunity-list expanded commands delete the specified extended community list by removing the corresponding ip community-list expanded statement from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>ip extcommunity-list expanded listname FILTER_TYPE R_EXT no ip extcommunity-list expanded listname default ip extcommunity-list expanded listname</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1590.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1540; Arista User Manual v. 4.12.3 (7/17/13), at 1364; Arista User Manual, v. 4.11.1 (1/11/13), at 1110; Arista User Manual v. 4.10.3 (10/22/12), at 922; Arista User Manual v. 4.9.3.2 (5/3/12), at 689; Arista User Manual v. 4.8.2 (11/18/11), at 519.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>ip extcommunity-list</p> <p>To create an extended community list to configure Virtual Private Network (VPN) route filtering, use the ip extcommunity-list command in global configuration mode. To delete the extended community list, use the no form of this command.</p> <p>Global Configuration Mode CLI</p> <pre>ip extcommunity-list expanded-list / expanded list-name {permit deny} [regular-expression] / standard-list / standard list-name {permit deny} [rt value] [soo value]</pre> <pre>no ip extcommunity-list expanded-list / expanded list-name / standard-list / standard list-name</pre> <p>To enter IP extended community-list configuration mode to create or configure an extended community-list, use the ip extcommunity-list command in global configuration mode. To delete the entire extended community list, use the no form of this command. To delete a single entry, use the no form in IP Extended community-list configuration mode.</p> <pre>ip extcommunity-list expanded-list / expanded list-name / standard-list / standard list-name</pre> <pre>no ip extcommunity-list expanded-list / expanded list-name / standard-list / standard list-name</pre> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 116.</p>	<p>ip extcommunity-list expanded</p> <p>The ip extcommunity-list expanded command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs). The command uses regular expressions to name the communities specified by the list.</p> <ul style="list-style-type: none"> Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>The no ip extcommunity-list expanded and default ip extcommunity-list expanded commands delete the specified extended community list by removing the corresponding ip community-list expanded statement from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <pre>ip extcommunity-list expanded listname FILTER_TYPE R_EXP</pre> <pre>no ip extcommunity-list expanded listname</pre> <pre>default ip extcommunity-list expanded listname</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1590.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1540; Arista User Manual v. 4.12.3 (7/17/13), at 1364; Arista User Manual, v. 4.11.1 (1/11/13), at 1110; Arista User Manual v. 4.10.3 (10/22/12), at 922; Arista User Manual v. 4.9.3.2 (5/3/12), at 689; Arista User Manual v. 4.8.2 (11/18/11), at 519.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Route Target Extended Community Attribute</p> <p>The route target (RT) extended community attribute is configured with the <code>rt</code> keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.</p> <p>Site of Origin Extended Community Attribute</p> <p>The site of origin (SOO) extended community attribute is configured with the <code>soo</code> keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 330.</p>	<p>ip extcommunity-list expanded</p> <p>The <code>ip extcommunity-list expanded</code> command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs). The command uses regular expressions to name the communities specified by the list.</p> <ul style="list-style-type: none"> • Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. • Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1590.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1540; Arista User Manual v. 4.12.3 (7/17/13), at 1364; Arista User Manual, v. 4.11.1 (1/11/13), at 1110; Arista User Manual v. 4.10.3 (10/22/12), at 922; Arista User Manual v. 4.9.3.2 (5/3/12), at 689; Arista User Manual v. 4.8.2 (11/18/11), at 519.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Route Target Extended Community Attribute</p> <p>The route target (RT) extended community attribute is configured with the rt keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.</p> <p>Site of Origin Extended Community Attribute</p> <p>The site of origin (SOO) extended community attribute is configured with the soo keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 118.</p>	<p>ip extcommunity-list expanded</p> <p>The ip extcommunity-list expanded command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs). The command uses regular expressions to name the communities specified by the list.</p> <ul style="list-style-type: none"> Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1590.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1540; Arista User Manual v. 4.12.3 (7/17/13), at 1364; Arista User Manual, v. 4.11.1 (1/11/13), at 1110; Arista User Manual v. 4.10.3 (10/22/12), at 922; Arista User Manual v. 4.9.3.2 (5/3/12), at 689; Arista User Manual v. 4.8.2 (11/18/11), at 519.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Route Target Extended Community Attribute</p> <p>The route target (RT) extended community attribute is configured with the <code>rt</code> keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.</p> <p>Site of Origin Extended Community Attribute</p> <p>The site of origin (SOO) extended community attribute is configured with the <code>soo</code> keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 330.</p>	<p>ip extcommunity-list standard</p> <p>The <code>ip extcommunity-list</code> standard command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs).</p> <ul style="list-style-type: none"> Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1591.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1541; Arista User Manual v. 4.12.3 (7/17/13), at 1365; Arista User Manual, v. 4.11.1 (1/11/13), at 1111; Arista User Manual v. 4.10.3 (10/22/12), at 923; Arista User Manual v. 4.9.3.2 (5/3/12), at 690; Arista User Manual v. 4.8.2 (11/18/11), at 520.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Route Target Extended Community Attribute</p> <p>The route target (RT) extended community attribute is configured with the rt keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.</p> <p>Site of Origin Extended Community Attribute</p> <p>The site of origin (SOO) extended community attribute is configured with the soo keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 118.</p>	<p>ip extcommunity-list standard</p> <p>The ip extcommunity-list standard command creates an extended community list to configure Virtual Private Network (VPN) route filtering. Extended community attributes filter routes for virtual routing and forwarding instances (VRFs).</p> <ul style="list-style-type: none"> Route Target (rt) attribute identifies a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that route traffic received from corresponding sites. Site of Origin (soo) attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a specific site must be assigned the same site of origin attribute whether a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents the creation of routing loops when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed. <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1591.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1541; Arista User Manual v. 4.12.3 (7/17/13), at 1365; Arista User Manual, v. 4.11.1 (1/11/13), at 1111; Arista User Manual v. 4.10.3 (10/22/12), at 923; Arista User Manual v. 4.9.3.2 (5/3/12), at 690; Arista User Manual v. 4.8.2 (11/18/11), at 520.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Route Target Extended Community Attribute</p> <p>The route target (RT) extended community attribute is configured with the <code>rt</code> keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.</p> <p>Site of Origin Extended Community Attribute</p> <p>The site of origin (SOO) extended community attribute is configured with the <code>soo</code> keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 330.</p>	<p>route targets (rt): This attribute identifies a set of sites and VRFs that may receive routes tagged with the configured route target. Configuring this attribute with a route allows that route to be placed in per-site forwarding tables that route traffic received from corresponding sites.</p> <p>site of origin (soo): This attribute identifies the site from where the Provider Edge (PE) router learns the route. All routes learned from a specific site have the same SOO extended community attribute, whether a site is connected to a single or multiple PE routers. This attribute prevents routing loops resulting from multihomed sites. The SOO attribute is configured on the interface and propagated into a BGP domain by redistribution. The SOO is applied to routes learned from VRFs.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1552.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1502; Arista User Manual v. 4.12.3 (7/17/13), at 1334; Arista User Manual, v. 4.11.1 (1/11/13), at 1083-84; Arista User Manual v. 4.10.3 (10/22/12), at 896; Arista User Manual v. 4.9.3.2 (5/3/12), at 668; Arista User Manual v. 4.8.2 (11/18/11), at 500.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Route Target Extended Community Attribute</p> <p>The route target (RT) extended community attribute is configured with the <code>rt</code> keyword. This attribute is used to identify a set of sites and VRFs that may receive routes that are tagged with the configured route target. Configuring the route target extended attribute with a route allows that route to be placed in the per-site forwarding tables that are used for routing traffic that is received from corresponding sites.</p> <p>Site of Origin Extended Community Attribute</p> <p>The site of origin (SOO) extended community attribute is configured with the <code>soo</code> keyword. This attribute uniquely identifies the site from which the provider edge (PE) router learned the route. All routes learned from a particular site must be assigned the same site of origin extended community attribute, regardless if a site is connected to a single PE router or multiple PE routers. Configuring this attribute prevents routing loops from occurring when a site is multihomed. The SOO extended community attribute is configured on the interface and is propagated into BGP through redistribution. The SOO should not be configured for stub sites or sites that are not multihomed.</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 118.</p>	<p>route targets (rt): This attribute identifies a set of sites and VRFs that may receive routes tagged with the configured route target. Configuring this attribute with a route allows that route to be placed in per-site forwarding tables that route traffic received from corresponding sites.</p> <p>site of origin (soo): This attribute identifies the site from where the Provider Edge (PE) router learns the route. All routes learned from a specific site have the same SOO extended community attribute, whether a site is connected to a single or multiple PE routers. This attribute prevents routing loops resulting from multihomed sites. The SOO attribute is configured on the interface and propagated into a BGP domain by redistribution. The SOO is applied to routes learned from VRFs.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1552.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1502; Arista User Manual v. 4.12.3 (7/17/13), at 1334; Arista User Manual, v. 4.11.1 (1/11/13), at 1083-84; Arista User Manual v. 4.10.3 (10/22/12), at 896; Arista User Manual v. 4.9.3.2 (5/3/12), at 668; Arista User Manual v. 4.8.2 (11/18/11), at 500.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Extended community attributes are used to configure, filter, and identify routes for virtual routing and forwarding instances (VRFs) and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 359</p>	<p>BGP extended communities configure, filter, and identify routes for virtual routing, forwarding instances (VRFs), and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/22014), at 1552.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1502; Arista User Manual v. 4.12.3 (7/17/13), at 1334; Arista User Manual, v. 4.11.1 (1/11/13), at 1083-84; Arista User Manual v. 4.10.3 (10/22/12), at 896; Arista User Manual v. 4.9.3.2 (5/3/12), at 668; Arista User Manual v. 4.8.2 (11/18/11), at 500.</p>
<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>Extended community attributes are used to configure, filter, and identify routes for virtual routing and forwarding instances (VRFs) and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 135.</p>	<p>BGP extended communities configure, filter, and identify routes for virtual routing, forwarding instances (VRFs), and Multiprotocol Label Switching (MPLS) Virtual Private Networks (VPNs).</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/22014), at 1552.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1502; Arista User Manual v. 4.12.3 (7/17/13), at 1334; Arista User Manual, v. 4.11.1 (1/11/13), at 1083-84; Arista User Manual v. 4.10.3 (10/22/12), at 896; Arista User Manual v. 4.9.3.2 (5/3/12), at 668; Arista User Manual v. 4.8.2 (11/18/11), at 500.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>neighbor ebgp-multihop</p> <p>To accept and attempt BGP connections to external peers residing on networks that are not directly connected, use the neighbor ebgp-multihop command in router configuration mode. To return to the default, use the no form of this command.</p> <p>neighbor {ip-address ipv6-address peer-group-name} ebgp-multihop [ttl] no neighbor {ip-address ipv6-address peer-group-name} ebgp-multihop</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 423.</p>	<p>neighbor ebgp-multihop</p> <p>The neighbor ebgp-multihop command programs the switch to accept and attempt BGP connections to the external peers residing on networks not directly connected to the switch. The command does not establish the multihop if the only route to the peer is the default route (0.0.0.0).</p> <p>The no neighbor ebgp-multihop command applies the system default configuration.</p> <p>The default neighbor ebgp-multihop command applies the system default configuration for individual neighbors, and applies the peer group's setting for neighbors that are members of a peer group.</p> <p>The no neighbor command removes all configuration commands for the neighbor at the specified address.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p>neighbor NEIGHBOR_ID ebgp-multihop [hop_number] no neighbor NEIGHBOR_ID ebgp-multihop default neighbor NEIGHBOR_ID ebgp-multihop</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1597.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1370; Arista User Manual, v. 4.11.1 (1/11/13), at 1116; Arista User Manual v. 4.10.3 (10/22/12), at 928; Arista User Manual v. 4.9.3.2 (5/3/12), at 693; Arista User Manual v. 4.8.2 (11/18/11), at 523; Arista User Manual v. 4.7.3 (7/18/11), at 383.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>neighbor ebgp-multihop</p> <p>To accept and attempt Border Gateway Protocol (BGP) connections to external peers residing on networks that are not directly connected, use the neighbor ebgp-multihop command in router configuration mode. To return to the default, use the no form of this command.</p> <p>neighbor <i>ip-address</i> <i>peer-group-name</i> ebgp-multihop [<i>ttl</i>]</p> <p>no neighbor <i>ip-address</i> <i>peer-group-name</i> ebgp-multihop</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 158.</p>	<p>neighbor ebgp-multihop</p> <p>The neighbor ebgp-multihop command programs the switch to accept and attempt BGP connections to the external peers residing on networks not directly connected to the switch. The command does not establish the multihop if the only route to the peer is the default route (0.0.0.0).</p> <p>The no neighbor ebgp-multihop command applies the system default configuration.</p> <p>The default neighbor ebgp-multihop command applies the system default configuration for individual neighbors, and applies the peer group's setting for neighbors that are members of a peer group.</p> <p>The no neighbor command removes all configuration commands for the neighbor at the specified address.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p>neighbor <i>NEIGHBOR_ID</i> ebgp-multihop [<i>hop_number</i>]</p> <p>no neighbor <i>NEIGHBOR_ID</i> ebgp-multihop</p> <p>default neighbor <i>NEIGHBOR_ID</i> ebgp-multihop</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1597.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1370; Arista User Manual, v. 4.11.1 (1/11/13), at 1116; Arista User Manual v. 4.10.3 (10/22/12), at 928; Arista User Manual v. 4.9.3.2 (5/3/12), at 693; Arista User Manual v. 4.8.2 (11/18/11), at 523; Arista User Manual v. 4.7.3 (7/18/11), at 383.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>neighbor local-as</div><div>To customize the AS_PATH attribute for routes received from an external Border Gateway Protocol (eBGP) neighbor, or to configure the BGP—Support for iBGP Local-AS feature, use the neighbor local-as command in address family or router configuration mode. To disable AS_PATH attribute customization or iBGP Local-AS support, use the no form of this command.</div><div>neighbor {ip-address ipv6-address peer-group-name} local-as [autonomous-system-number [no-prepend [replace-as [dual-as]]]]</div><div>no neighbor {ip-address ipv6-address peer-group-name} local-as</div></div> <div>...</div> <div><div>no-prepend</div><div>(Optional) Does not prepend the local autonomous system number to any routes received from the eBGP neighbor.</div></div> <div>Cisco IOS IP Routing: BGP Command Reference (2013), at 442.</div>	<div><div>neighbor local-as</div><div>The neighbor local-as command enables the modification of the AS_PATH attribute for routes received from an eBGP neighbor, allowing the switch to appear as a member of a different autonomous system (AS) to external peers. This switch does not prepend the local AS number to routes received from the eBGP neighbor. The AS number from the local BGP routing process is not prepended.</div><div>The no neighbor local-as command disables AS_PATH modification for the specified peer or peer group.</div><div>The default neighbor local-as command disables AS_PATH modification for individual neighbors, and applies the peer group's setting for neighbors that are members of a peer group.</div><div>Platformall</div><div>Command ModeRouter-BGP Configuration</div><div>Command Syntax</div><div>neighbor NEIGHBOR_ID local-as as_id no-prepend replace-as</div><div>no neighbor NEIGHBOR_ID local-as</div><div>default neighbor NEIGHBOR_ID local-as</div></div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1601.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1373; Arista User Manual, v. 4.11.1 (1/11/13), at 1119; Arista User Manual v. 4.10.3 (10/22/12), at 931; Arista User Manual v. 4.9.3.2 (5/3/12), at 696; Arista User Manual v. 4.8.2 (11/18/11), at 526; Arista User Manual v. 4.7.3 (7/18/11), at 386.</div>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>neighbor local-as</p> <p>To customize the AS-path attribute for routes received from an external Border Gateway Protocol (eBGP) neighbor, use the neighbor local-as command in address family or router configuration mode. To disable AS-path attribute customization, use the no form of this command.</p> <p>neighbor ip-address local-as as-number [no-prepend [replace-as [dual-as]]]</p> <p>no neighbor ip-address local-as as-number</p> <p>...</p> <p>no-prepend (Optional) Does not prepend the local autonomous system number to any routes received from the eBGP neighbor.</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 166.</p>	<p>neighbor local-as</p> <p>The neighbor local-as command enables the modification of the AS_PATH attribute for routes received from an eBGP neighbor, allowing the switch to appear as a member of a different autonomous system (AS) to external peers. This switch does not prepend the local AS number to routes received from the eBGP neighbor. The AS number from the local BGP routing process is not prepended.</p> <p>The no neighbor local-as command disables AS_PATH modification for the specified peer or peer group.</p> <p>The default neighbor local-as command disables AS_PATH modification for individual neighbors, and applies the peer group's setting for neighbors that are members of a peer group.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p>neighbor NEIGHBOR_ID local-as as_id no-prepend replace-as no neighbor NEIGHBOR_ID local-as default neighbor NEIGHBOR_ID local-as</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1601.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1373; Arista User Manual, v. 4.11.1 (1/11/13), at 1119; Arista User Manual v. 4.10.3 (10/22/12), at 931; Arista User Manual v. 4.9.3.2 (5/3/12), at 696; Arista User Manual v. 4.8.2 (11/18/11), at 526; Arista User Manual v. 4.7.3 (7/18/11), at 386.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>neighbor remove-private-as</div> <p>To remove private autonomous system numbers from the autonomous system path (a list of autonomous systems that a route passes through to reach a BGP peer) in eBGP outbound routing updates, use the neighbor remove-private-as command in router configuration, address family configuration, or peer-group template mode. To disable this function, use the no form of this command.</p> <div>neighbor {ip-address peer-group-name} remove-private-as [all [replace-as]] no neighbor {ip-address peer-group-name} remove-private-as</div> <div>Syntax Description</div> <table><tr><td>ip-address</td><td>IP address of the BGP-speaking neighbor.</td></tr><tr><td>peer-group-name</td><td>Name of a BGP peer group.</td></tr><tr><td>all</td><td>(Optional) Removes all private AS numbers from the AS path in outgoing updates.</td></tr><tr><td>replace-as</td><td>(Optional) As long as the all keyword is specified, the replace-as keyword causes all private AS numbers in the AS path to be replaced with the router's local AS number.</td></tr></table> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 479.</p>	ip-address	IP address of the BGP-speaking neighbor.	peer-group-name	Name of a BGP peer group.	all	(Optional) Removes all private AS numbers from the AS path in outgoing updates.	replace-as	(Optional) As long as the all keyword is specified, the replace-as keyword causes all private AS numbers in the AS path to be replaced with the router's local AS number.	<div>neighbor remove-private-as</div> <p>The neighbor remove-private-as command removes private autonomous system numbers from outbound routing updates for external BGP (eBGP) neighbors. When the autonomous system path includes both private and public autonomous system numbers, the REMOVAL parameter specifies how the private autonomous system number is removed.</p> <p>The no neighbor remove-private-as command applies the system default (preserves private AS numbers) for the specified peer.</p> <p>The default neighbor remove-private-as command applies the system default for individual neighbors and applies the peer group's setting for neighbors that are members of a peer group.</p> <p>The no neighbor command removes all configuration commands for the neighbor at the specified address.</p> <div>Platformall Command ModeRouter-BGP Configuration</div> <div>Command Syntax</div> <div>neighbor NEIGHBOR_ID remove-private-as [REMOVAL] no neighbor NEIGHBOR_ID remove-private-as default neighbor NEIGHBOR_ID remove-private-as</div> <div>Parameters</div> <ul style="list-style-type: none">NEIGHBOR_ID IP address or peer group name. Values include:<ul style="list-style-type: none">ipv4_addr neighbor's IPv4 address.ipv6_addr neighbor's IPv6 address.group_name peer group name.REMOVAL Specifies removal of private autonomous AS number when path includes both private and public numbers. Values include:<ul style="list-style-type: none"><no parameter> private AS numbers are not removed.all removes all private AS numbers from AS path in outbound updates.all replace-as all private AS numbers in AS path are replaced with router's local AS number. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1612.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1384; Arista User Manual, v. 4.11.1 (1/11/13), at 1130.</p>
	ip-address	IP address of the BGP-speaking neighbor.								
	peer-group-name	Name of a BGP peer group.								
all	(Optional) Removes all private AS numbers from the AS path in outgoing updates.									
replace-as	(Optional) As long as the all keyword is specified, the replace-as keyword causes all private AS numbers in the AS path to be replaced with the router's local AS number.									

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>neighbor remove-private-as</p> <p>To remove private autonomous system numbers from the autonomous system path, a list of autonomous system numbers that a route passes through to reach a BGP peer, in outbound routing updates, use the neighbor remove-private-as command in router configuration mode. To disable this function, use the no form of this command.</p> <p>neighbor {ip-address peer-group-name} remove-private-as</p> <p>no neighbor {ip-address peer-group-name} remove-private-as</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 188.</p>	<p>neighbor remove-private-as</p> <p>The neighbor remove-private-as command removes private autonomous system numbers from outbound routing updates for external BGP (eBGP) neighbors. When the autonomous system path includes both private and public autonomous system numbers, the <i>REMOVAL</i> parameter specifies how the private autonomous system number is removed.</p> <p>The no neighbor remove-private-as command applies the system default (preserves private AS numbers) for the specified peer.</p> <p>The default neighbor remove-private-as command applies the system default for individual neighbors and applies the peer group's setting for neighbors that are members of a peer group.</p> <p>The no neighbor command removes all configuration commands for the neighbor at the specified address.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p>neighbor NEIGHBOR_ID remove-private-as [REMOVAL]</p> <p>no neighbor NEIGHBOR_ID remove-private-as</p> <p>default neighbor NEIGHBOR_ID remove-private-as</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1612.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1384; Arista User Manual, v. 4.11.1 (1/11/13), at 1130.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>neighbor route-reflector-client</p> <p>To configure the router as a BGP route reflector and configure the specified neighbor as its client, use the neighbor route-reflector-client command in address family or router configuration mode. To indicate that the neighbor is not a client, use the no form of this command.</p> <p>neighbor {ip-address ipv6-address peer-group-name} route-reflector-client no neighbor {ip-address ipv6-address peer-group-name} route-reflector-client</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 486</p> <p>By default, all internal BGP (iBGP) speakers in an autonomous system must be fully meshed, and neighbors do not readvertise iBGP learned routes to neighbors, thus preventing a routing information loop. When all the clients are disabled, the local router is no longer a route reflector.</p> <p>If you use route reflectors, all iBGP speakers need not be fully meshed. In the route reflector model, an Internal BGP peer is configured to be a <i>route reflector</i> responsible for passing iBGP learned routes to iBGP neighbors. This scheme eliminates the need for each router to talk to every other router.</p> <p>Use the neighbor route-reflector-client command to configure the local router as the route reflector and the specified neighbor as one of its clients. All the neighbors configured with this command will be members of the client group and the remaining iBGP peers will be members of the nonclient group for the local route reflector.</p> <p>The bgp client-to-client reflection command controls client-to-client reflection.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 487.</p>	<p>neighbor route-reflector-client</p> <p>Participating BGP routers within an AS communicate EBGP-learned routes to all of their peers, but to prevent routing loops they must not re-advertise iBGP-learned routes within the AS. To ensure that all members of the AS share the same routing information, a fully meshed network topology (in which each member router of the AS is connected to every other member) can be used, but this topology can result in high volumes of iBGP messages when it is scaled. Instead, in larger networks one or more routers can be configured as route reflectors.</p> <p>A route reflector is configured to re-advertise routes learned through iBGP to a group of BGP neighbors within the AS (its clients), eliminating the need for a fully meshed topology.</p> <p>The neighbor route-reflector-client command configures the switch to act as a route reflector and configures the specified neighbor as one of its clients. Additional clients can be specified by re-issuing the command.</p> <p>The bgp client-to-client reflection command controls client-to-client reflection.</p> <p>The no neighbor route-reflector-client and default neighbor route-reflector-client commands disable route reflection by deleting the neighbor route-reflector-client command from <i>running-config</i>.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p>neighbor NEIGHBOR_ID route-reflector-client no neighbor NEIGHBOR_ID route-reflector-client default neighbor NEIGHBOR_ID route-reflector-client</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1614.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1386; Arista User Manual, v. 4.11.1 (1/11/13), at 1132.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<p>neighbor route-reflector-client</p> <p>To configure the router as a BGP route reflector and configure the specified neighbor as its client, use the neighbor route-reflector-client command in address family or router configuration mode. To indicate that the neighbor is not a client, use the no form of this command.</p> <p>neighbor <i>ip-address</i> route-reflector-client</p> <p>no neighbor <i>ip-address</i> route-reflector-client</p> <p>Usage Guidelines</p> <p>By default, all internal BGP (iBGP) speakers in an autonomous system must be fully meshed, and neighbors do not readvertise iBGP learned routes to neighbors, thus preventing a routing information loop. When all the clients are disabled, the local router is no longer a route reflector.</p> <p>If you use route reflectors, all iBGP speakers need not be fully meshed. In the route reflector model, an Interior BGP peer is configured to be a <i>route reflector</i> responsible for passing iBGP learned routes to iBGP neighbors. This scheme eliminates the need for each router to talk to every other router.</p> <p>Use the neighbor route-reflector-client command to configure the local router as the route reflector and the specified neighbor as one of its clients. All the neighbors configured with this command will be members of the client group and the remaining iBGP peers will be members of the nonclient group for the local route reflector.</p> <p>The bgp client-to-client reflection command controls client-to-client reflection.</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 192.</p>	<p>neighbor route-reflector-client</p> <p>Participating BGP routers within an AS communicate EBGP-learned routes to all of their peers, but to prevent routing loops they must not re-advertise iBGP-learned routes within the AS. To ensure that all members of the AS share the same routing information, a fully meshed network topology (in which each member router of the AS is connected to every other member) can be used, but this topology can result in high volumes of iBGP messages when it is scaled. Instead, in larger networks one or more routers can be configured as route reflectors.</p> <p>A route reflector is configured to re-advertise routes learned through iBGP to a group of BGP neighbors within the AS (its clients), eliminating the need for a fully meshed topology.</p> <p>The neighbor route-reflector-client command configures the switch to act as a route reflector and configures the specified neighbor as one of its clients. Additional clients can be specified by re-issuing the command.</p> <p>The bgp client-to-client reflection command controls client-to-client reflection.</p> <p>The no neighbor route-reflector-client and default neighbor route-reflector-client commands disable route reflection by deleting the neighbor route-reflector-client command from <i>running-config</i>.</p> <p>Platform all</p> <p>Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p>neighbor <i>NEIGHBOR_ID</i> route-reflector-client</p> <p>no neighbor <i>NEIGHBOR_ID</i> route-reflector-client</p> <p>default neighbor <i>NEIGHBOR_ID</i> route-reflector-client</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1614.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1386; Arista User Manual, v. 4.11.1 (1/11/13), at 1132.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>neighbor ebgp-multihop</div>	Accepts and attempts BGP connections to external peers residing on networks that are not directly connected.	<div>neighbor ebgp-multihop</div> <p>The neighbor ebgp-multihop command programs the switch to accept and attempt BGP connections to the external peers residing on networks not directly connected to the switch. The command does not establish the multihop if the only route to the peer is the default route (0.0.0.0).</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1597.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1370; Arista User Manual, v. 4.11.1 (1/11/13), at 1116; Arista User Manual v. 4.10.3 (10/22/12), at 928; Arista User Manual v. 4.9.3.2 (5/3/12), at 693; Arista User Manual v. 4.8.2 (11/18/11), at 523; Arista User Manual v. 4.7.3 (7/18/11), at 383.</p>
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<div>neighbor ebgp-multihop</div>	Accepts and attempts BGP connections to external peers residing on networks that are not directly connected.	<div>neighbor ebgp-multihop</div> <p>The neighbor ebgp-multihop command programs the switch to accept and attempt BGP connections to the external peers residing on networks not directly connected to the switch. The command does not establish the multihop if the only route to the peer is the default route (0.0.0.0).</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1597.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1370; Arista User Manual, v. 4.11.1 (1/11/13), at 1116; Arista User Manual v. 4.10.3 (10/22/12), at 928; Arista User Manual v. 4.9.3.2 (5/3/12), at 693; Arista User Manual v. 4.8.2 (11/18/11), at 523; Arista User Manual v. 4.7.3 (7/18/11), at 383.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><td>neighbor route-map</td><td>Applies a route map to inbound or outbound routes.</td></tr></table> Cisco IOS IP Routing: BGP Command Reference (2013), at 524.	neighbor route-map	Applies a route map to inbound or outbound routes.	neighbor route-map (BGP) <u>The neighbor route-map command applies a route map to inbound or outbound BGP routes.</u> When a route map is applied to outbound routes, the switch will advertise only routes matching at least one section of the route map. Only one outbound route map and one inbound route map can be applied to a given neighbor. A new route map applied to a neighbor will replace the previous route map. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1613. <i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1385; Arista User Manual, v. 4.11.1 (1/11/13), at 1131; Arista User Manual v. 4.10.3 (10/22/12), at 943.
neighbor route-map	Applies a route map to inbound or outbound routes.			
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<table><tr><td>neighbor route-map</td><td>Applies a route map to inbound or outbound routes.</td></tr></table> Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 204.	neighbor route-map	Applies a route map to inbound or outbound routes.	neighbor route-map (BGP) <u>The neighbor route-map command applies a route map to inbound or outbound BGP routes.</u> When a route map is applied to outbound routes, the switch will advertise only routes matching at least one section of the route map. Only one outbound route map and one inbound route map can be applied to a given neighbor. A new route map applied to a neighbor will replace the previous route map. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1613. <i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1385; Arista User Manual, v. 4.11.1 (1/11/13), at 1131; Arista User Manual v. 4.10.3 (10/22/12), at 943.
neighbor route-map	Applies a route map to inbound or outbound routes.			

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<div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><div>show ip bgp ipv4 multicast summary</div><div>To display a summary of IP Version 4 multicast database-related information, use the show ip bgp ipv4 multicast summary command in EXEC mode.</div><div>show ip bgp ipv4 multicast summary</div></div> <div>Cisco IOS IP Routing: BGP Command Reference (2013), at 757</div> <div>Table 54: show ip bgp ipv4 multicast summary Field Descriptions</div> <table><tr><th>Field</th><th>Description</th></tr><tr><td>Neighbor</td><td>IP address of configured neighbor in the multicast routing table.</td></tr><tr><td>V</td><td>Version of multiprotocol BGP used.</td></tr><tr><td>AS</td><td>Autonomous system to which the neighbor belongs.</td></tr><tr><td>MsgRcvd</td><td>Number of messages received from the neighbor.</td></tr><tr><td>MsgSent</td><td>Number of messages sent to the neighbor.</td></tr><tr><td>TblVer</td><td>Number of the table version, which is incremented each time the table changes.</td></tr><tr><td>InQ</td><td>Number of messages received in the input queue.</td></tr><tr><td>OutQ</td><td>Number of messages ready to go in the output queue.</td></tr><tr><td>Up/Down</td><td>Days and hours that the neighbor has been up or down (no information in the State column means the connection is up).</td></tr><tr><td>State/PfxRcd</td><td>State of the neighbor/number of routes received. If no state is indicated, the state is up.</td></tr></table>	Field	Description	Neighbor	IP address of configured neighbor in the multicast routing table.	V	Version of multiprotocol BGP used.	AS	Autonomous system to which the neighbor belongs.	MsgRcvd	Number of messages received from the neighbor.	MsgSent	Number of messages sent to the neighbor.	TblVer	Number of the table version, which is incremented each time the table changes.	InQ	Number of messages received in the input queue.	OutQ	Number of messages ready to go in the output queue.	Up/Down	Days and hours that the neighbor has been up or down (no information in the State column means the connection is up).	State/PfxRcd	State of the neighbor/number of routes received. If no state is indicated, the state is up.	<div><div>show ip bgp summary</div><div>The show ip bgp summary command displays BGP path, prefix, and attribute information for all BGP neighbors.</div><div>Platformall Command ModeEXEC</div><div>Command Syntax</div><div>show ip bgp summary [VRF_INSTANCE]</div><div>Parameters</div><div><div>VRF_INSTANCE specifies VRF instances.</div><div><div><no parameter> displays routing table for context-active VRF.</div><div>vrf vrf_name displays routing table for the specified VRF.</div><div>vrf all displays routing table for all VRFs.</div><div>vrf default displays routing table for default VRF.</div></div></div><div>Display Values</div><div>Header Row</div><div><div>BGP router identifier: The router identifier – loopback address or highest IP address.</div><div>Local AS Number: AS number assigned to switch</div></div><div>Neighbor Table Columns</div><div><div>(First) Neighbor: IP address of the neighbor.</div><div>(Second) V: BGP version number spoken to the neighbor</div><div>(Third) AS: Neighbor's Autonomous system number.</div><div>(Fourth) MsgRcvd: Number of messages received from the neighbor.</div><div>(Fifth) MsgSent: Number of messages sent to the neighbor.</div><div>(Sixth) InQ: Number of messages queued to be processed from the neighbor.</div><div>(Seventh) OutQ: Number of messages queued to be sent to the neighbor.</div><div>(Eighth) Up/Down: Period the BGP session has been in Established state or its current status.</div><div>(Ninth) State: State of the BGP session and the number of routes received from a neighbor.</div></div></div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1641.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1407; Arista User Manual, v. 4.11.1 (1/11/13), at 1153; Arista User Manual v. 4.10.3 (10/22/12), at 964; Arista User Manual v. 4.9.3.2 (5/3/12), at 728; Arista User Manual v. 4.8.2 (11/18/11), at 549; Arista User Manual v. 4.7.3 (7/18/11), at 402.</div>
	Field	Description																						
	Neighbor	IP address of configured neighbor in the multicast routing table.																						
	V	Version of multiprotocol BGP used.																						
	AS	Autonomous system to which the neighbor belongs.																						
MsgRcvd	Number of messages received from the neighbor.																							
MsgSent	Number of messages sent to the neighbor.																							
TblVer	Number of the table version, which is incremented each time the table changes.																							
InQ	Number of messages received in the input queue.																							
OutQ	Number of messages ready to go in the output queue.																							
Up/Down	Days and hours that the neighbor has been up or down (no information in the State column means the connection is up).																							
State/PfxRcd	State of the neighbor/number of routes received. If no state is indicated, the state is up.																							

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Cisco IOS 12.4 Effective date of registration: 8/12/2005	<div><div>show ip bgp ipv4 multicast summary</div><p>To display a summary of IP Version 4 multicast database-related information, use the <code>show ip bgp ipv4 multicast summary</code> command in EXEC mode.</p><div>show ip bgp ipv4 multicast summary</div></div> <div><div>Table 27 show ip bgp ipv4 multicast summary Field Descriptions</div><table><tr><th>Field</th><th>Description</th></tr><tr><td>Neighbor</td><td>IP address of configured neighbor in the multicast routing table.</td></tr><tr><td>V</td><td>Version of multiprotocol BGP used.</td></tr><tr><td>AS</td><td>Autonomous system to which the neighbor belongs.</td></tr><tr><td>MsgRcvd</td><td>Number of messages received from the neighbor.</td></tr><tr><td>MsgSent</td><td>Number of messages sent to the neighbor.</td></tr><tr><td>TblVer</td><td>Number of the table version, which is incremented each time the table changes.</td></tr><tr><td>InQ</td><td>Number of messages received in the input queue.</td></tr><tr><td>OutQ</td><td>Number of messages ready to go in the output queue.</td></tr><tr><td>Up/Down</td><td>Days and hours that the neighbor has been up or down (no information in the State column means the connection is up).</td></tr><tr><td>State/PfxRcd</td><td>State of the neighbor/number of routes received. If no state is indicated, the state is up.</td></tr></table></div> <div>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 308.</div>	Field	Description	Neighbor	IP address of configured neighbor in the multicast routing table.	V	Version of multiprotocol BGP used.	AS	Autonomous system to which the neighbor belongs.	MsgRcvd	Number of messages received from the neighbor.	MsgSent	Number of messages sent to the neighbor.	TblVer	Number of the table version, which is incremented each time the table changes.	InQ	Number of messages received in the input queue.	OutQ	Number of messages ready to go in the output queue.	Up/Down	Days and hours that the neighbor has been up or down (no information in the State column means the connection is up).	State/PfxRcd	State of the neighbor/number of routes received. If no state is indicated, the state is up.	<div><div>show ip bgp summary</div><p>The <code>show ip bgp summary</code> command displays BGP path, prefix, and attribute information for all BGP neighbors.</p><div>Platform all Command Mode EXEC</div><div>Command Syntax</div><div>show ip bgp summary [VRF_INSTANCE]</div><div>Parameters</div><div><div><div>• VRF_INSTANCE specifies VRF instances.</div><div><div>— <no parameter> displays routing table for context-active VRF.</div><div>— vrf vrf_name displays routing table for the specified VRF.</div><div>— vrf all displays routing table for all VRFs.</div><div>— vrf default displays routing table for default VRF.</div></div></div><div>Display Values</div><div>Header Row</div><div><div>• BGP router identifier: The router identifier – loopback address or highest IP address.</div><div>• Local AS Number: AS number assigned to switch</div></div><div>Neighbor Table Columns</div><div><div>• (First) Neighbor: IP address of the neighbor.</div><div>• (Second) V: BGP version number spoken to the neighbor</div><div>• (Third) AS: Neighbor's Autonomous system number.</div><div>• (Fourth) MsgRcvd: Number of messages received from the neighbor.</div><div>• (Fifth) MsgSent: Number of messages sent to the neighbor.</div><div>• (Sixth) InQ: Number of messages queued to be processed from the neighbor.</div><div>• (Seventh) OutQ: Number of messages queued to be sent to the neighbor.</div><div>• (Eighth) Up/Down: Period the BGP session has been in Established state or its current status.</div><div>• (Ninth) State: State of the BGP session and the number of routes received from a neighbor.</div></div></div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1641.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1407; Arista User Manual, v. 4.11.1 (1/11/13), at 1153; Arista User Manual v. 4.10.3 (10/22/12), at 964; Arista User Manual v. 4.9.3.2 (5/3/12), at 728; Arista User Manual v. 4.8.2 (11/18/11), at 549; Arista User Manual v. 4.7.3 (7/18/11), at 402.</div></div>
	Field	Description																						
Neighbor	IP address of configured neighbor in the multicast routing table.																							
V	Version of multiprotocol BGP used.																							
AS	Autonomous system to which the neighbor belongs.																							
MsgRcvd	Number of messages received from the neighbor.																							
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OutQ	Number of messages ready to go in the output queue.																							
Up/Down	Days and hours that the neighbor has been up or down (no information in the State column means the connection is up).																							
State/PfxRcd	State of the neighbor/number of routes received. If no state is indicated, the state is up.																							

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<div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<p>The following is sample output from the <code>show ip bgp paths</code> command in privileged EXEC mode:</p> <pre>Router# show ip bgp paths Address Hash Refcount Metric Path 0x60E5742C 0 1 0 1 0x60E3D7AC 2 1 0 ? 0x60E5C6C0 11 3 0 10 ? 0x60E577B0 35 2 40 10 ?</pre> <p>The table below describes the significant fields shown in the display.</p> <p><i>Table 64: show ip bgp paths Field Descriptions</i></p> <table><tr><th>Field</th><th>Description</th></tr><tr><td>Address</td><td>Internal address where the path is stored.</td></tr><tr><td>Hash</td><td>Hash bucket where path is stored.</td></tr><tr><td>Refcount</td><td>Number of routes using that path.</td></tr><tr><td>Metric</td><td>The Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)</td></tr><tr><td>Path</td><td>The autonomous system path for that route, followed by the origin code for that route.</td></tr></table> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 795.</p>	Field	Description	Address	Internal address where the path is stored.	Hash	Hash bucket where path is stored.	Refcount	Number of routes using that path.	Metric	The Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)	Path	The autonomous system path for that route, followed by the origin code for that route.	<p><code>show ip bgp paths</code></p> <p>The show ip bgp paths command displays all BGP paths in the database.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p><code>show ip bgp paths [VRF_INSTANCE]</code></p> <p>Parameters</p> <ul style="list-style-type: none"><code>VRF_INSTANCE</code> specifies VRF instances.<ul style="list-style-type: none"><code><no parameter></code> displays routing table for context-active VRF.<code>vrf vrf_name</code> displays routing table for the specified VRF.<code>vrf all</code> displays routing table for all VRFs.<code>vrf default</code> displays routing table for default VRF. <p>Display Values</p> <ul style="list-style-type: none">Refcount: Number of routes using a listed path.Metric: The Multi Exit Discriminator (MED) metric for the path.Path: The autonomous system path for that route, followed by the origin code for that route. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1638,</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1588; Arista User Manual v. 4.12.3 (7/17/13), at 1405; Arista User Manual, v. 4.11.1 (1/11/13), at 1151; Arista User Manual v. 4.10.3 (10/22/12), at 962; Arista User Manual v. 4.9.3.2 (5/3/12), at 725; Arista User Manual v. 4.8.2 at 547; Arista User Manual v. 4.8.2 (11/18/11), at 547; Arista User Manual v. 4.7.3 (7/18/11), at 401; Arista User Manual v. 4.6.0 (12/22/2010), at 249; Arista User Manual v. 4.6.0 (12/22/2010), at 249</p>
	Field	Description												
	Address	Internal address where the path is stored.												
	Hash	Hash bucket where path is stored.												
	Refcount	Number of routes using that path.												
Metric	The Multi Exit Discriminator (MED) metric for the path. (The name of this metric for BGP versions 2 and 3 is INTER_AS.)													
Path	The autonomous system path for that route, followed by the origin code for that route.													

Copyright Registration Information	Cisco	Arista												
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<p>The following is sample output from the show ip bgp paths command in privileged EXEC mode:</p> <pre>Router# show ip bgp paths Address Hash Refcount Metric Path 0x60B5742C 0 1 0 i 0x60B3D7AC 2 1 0 ? 0x60B5C6C0 11 3 0 10 ? 0x60B577B0 35 2 40 10 ?</pre> <p>Table 33 describes the significant fields shown in the display.</p> <p>Table 33 show ip bgp paths Field Descriptions</p> <table><tr><th>Field</th><th>Description</th></tr><tr><td>Address</td><td>Internal address where the path is stored.</td></tr><tr><td>Hash</td><td>Hash bucket where path is stored.</td></tr><tr><td>Refcount</td><td>Number of routes using that path.</td></tr><tr><td>Metric</td><td>The Multi Exit Discriminator (MED) metric for the path (The name of this metric for BGP versions 2 and 3 is INTER_AS.)</td></tr><tr><td>Path</td><td>The autonomous system path for that route, followed by the origin code for that route.</td></tr></table> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 308.</p>	Field	Description	Address	Internal address where the path is stored.	Hash	Hash bucket where path is stored.	Refcount	Number of routes using that path.	Metric	The Multi Exit Discriminator (MED) metric for the path (The name of this metric for BGP versions 2 and 3 is INTER_AS.)	Path	The autonomous system path for that route, followed by the origin code for that route.	<p>show ip bgp paths</p> <p>The show ip bgp paths command displays all BGP paths in the database.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p>show ip bgp paths [VRF_INSTANCE]</p> <p>Parameters</p> <ul style="list-style-type: none">VRF_INSTANCE specifies VRF instances.<ul style="list-style-type: none"><no parameter> displays routing table for context-active VRF.vrf vrf_name displays routing table for the specified VRF.vrf all displays routing table for all VRFs.vrf default displays routing table for default VRF. <p>Display Values</p> <ul style="list-style-type: none">Refcount: Number of routes using a listed path.Metric: The Multi Exit Discriminator (MED) metric for the path.Path: The autonomous system path for that route, followed by the origin code for that route. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1638,</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1588; Arista User Manual v. 4.12.3 (7/17/13), at 1405; Arista User Manual, v. 4.11.1 (1/11/13), at 1151; Arista User Manual v. 4.10.3 (10/22/12), at 962; Arista User Manual v. 4.9.3.2 (5/3/12), at 725; Arista User Manual v. 4.8.2 at 547; Arista User Manual v. 4.8.2 (11/18/11), at 547 ; Arista User Manual v. 4.7.3 (7/18/11), at 401; Arista User Manual v. 4.6.0 (12/22/2010), at 249; Arista User Manual v. 4.6.0 (12/22/2010), at 249</p>
	Field	Description												
	Address	Internal address where the path is stored.												
Hash	Hash bucket where path is stored.													
Refcount	Number of routes using that path.													
Metric	The Multi Exit Discriminator (MED) metric for the path (The name of this metric for BGP versions 2 and 3 is INTER_AS.)													
Path	The autonomous system path for that route, followed by the origin code for that route.													

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p data-bbox="306 280 1136 329">The <code>show ip bgp summary</code> command is used to display BGP path, prefix, and attribute information for all connections to BGP neighbors.</p> <p data-bbox="306 367 1062 399">Cisco IOS IP Routing: BGP Command Reference (2013), at 819.</p>	<p data-bbox="1178 280 1472 313">show ip bgp summary</p> <p data-bbox="1178 334 2051 383">The <code>show ip bgp summary</code> command displays BGP path, prefix, and attribute information for all BGP neighbors.</p> <p data-bbox="1178 420 1881 453">Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1641.</p> <p data-bbox="1178 490 2018 652"><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1407; Arista User Manual, v. 4.11.1 (1/11/13), at 1153; Arista User Manual v. 4.10.3 (10/22/12), at 964; Arista User Manual v. 4.9.3.2 (5/3/12), at 728; Arista User Manual v. 4.8.2 (11/18/11), at 549; Arista User Manual v. 4.7.3 (7/18/11), at 402.</p>
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<p data-bbox="306 699 1136 748">The <code>show ip bgp summary</code> command is used to display BGP path, prefix, and attribute information for all connections to BGP neighbors.</p> <p data-bbox="306 786 1125 850">Cisco IOS IP Routing Protocols Command Reference (July 16, 2005), at 323.</p>	<p data-bbox="1178 691 1472 724">show ip bgp summary</p> <p data-bbox="1178 745 2051 794">The <code>show ip bgp summary</code> command displays BGP path, prefix, and attribute information for all BGP neighbors.</p> <p data-bbox="1178 831 1881 863">Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1641.</p> <p data-bbox="1178 901 2018 1063"><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1407; Arista User Manual, v. 4.11.1 (1/11/13), at 1153; Arista User Manual v. 4.10.3 (10/22/12), at 964; Arista User Manual v. 4.9.3.2 (5/3/12), at 728; Arista User Manual v. 4.8.2 (11/18/11), at 549; Arista User Manual v. 4.7.3 (7/18/11), at 402.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><td>Up/Down</td><td>The length of time that the BGP session has been in the Established state, or the current status if not in the Established state.</td></tr></table>	Up/Down	The length of time that the BGP session has been in the Established state, or the current status if not in the Established state.		<p>Neighbor Table Columns</p> <ul style="list-style-type: none">• (First) Neighbor: IP address of the neighbor.• (Second) V: BGP version number spoken to the neighbor• (Third) AS: Neighbor's Autonomous system number.• (Fourth) MsgRcvd: Number of messages received from the neighbor.• (Fifth) MsgSent: Number of messages sent to the neighbor.• (Sixth) InQ: Number of messages queued to be processed from the neighbor.• (Seventh) OutQ: Number of messages queued to be sent to the neighbor.• (Eighth) Up/Down: Period the BGP session has been in Established state or its current status.• (Ninth) State: State of the BGP session and the number of routes received from a neighbor. <p>After the maximum number of routes are received (maximum paths (BGP)), the field displays PfxRcd, the neighbor is shut down, and the connection is set to Idle.</p>
	Up/Down	The length of time that the BGP session has been in the Established state, or the current status if not in the Established state.			
	<p>Cisco IOS IP Routing: BGP Command Reference (2013), at 821.</p> <table><tr><td>State/PfxRcd</td><td>Current state of the BGP session, and the number of prefixes that have been received from a neighbor or peer group. When the maximum number (as set by the neighbor maximum-prefix command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is set to Idle.</td></tr></table> <p>An (Admin) entry with Idle status indicates that the connection has been shut down using the neighbor shutdown command.</p> <p>Cisco IOS IP Routing: BGP Command Reference (2013), at 822.</p>	State/PfxRcd	Current state of the BGP session, and the number of prefixes that have been received from a neighbor or peer group. When the maximum number (as set by the neighbor maximum-prefix command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is set to Idle.		
State/PfxRcd	Current state of the BGP session, and the number of prefixes that have been received from a neighbor or peer group. When the maximum number (as set by the neighbor maximum-prefix command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is set to Idle.				
Cisco IOS 12.4 Effective date of registration: 8/12/2005	<table><tr><td>Up/Down</td><td>The length of time that the BGP session has been in the Established state, or the current state if it is not Established.</td></tr></table>	Up/Down	The length of time that the BGP session has been in the Established state, or the current state if it is not Established.		<p>Neighbor Table Columns</p> <ul style="list-style-type: none">• (First) Neighbor: IP address of the neighbor.• (Second) V: BGP version number spoken to the neighbor• (Third) AS: Neighbor's Autonomous system number.• (Fourth) MsgRcvd: Number of messages received from the neighbor.• (Fifth) MsgSent: Number of messages sent to the neighbor.• (Sixth) InQ: Number of messages queued to be processed from the neighbor.• (Seventh) OutQ: Number of messages queued to be sent to the neighbor.• (Eighth) Up/Down: Period the BGP session has been in Established state or its current status.• (Ninth) State: State of the BGP session and the number of routes received from a neighbor. <p>After the maximum number of routes are received (maximum paths (BGP)), the field displays PfxRcd, the neighbor is shut down, and the connection is set to Idle.</p>
	Up/Down	The length of time that the BGP session has been in the Established state, or the current state if it is not Established.			
	<table><tr><td>State/PfxRcd</td><td>Current state of the BGP session/the number of prefixes the router has received from a neighbor or peer group. When the maximum number (as set by the neighbor maximum-prefix command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is Idle.</td></tr></table> <p>An (Admin) entry with Idle status indicates that the connection has been shut down using the neighbor shutdown command.</p> <p>Cisco IOS IP Routing Protocols Command Reference (June 10, 2005), at 318.</p>	State/PfxRcd	Current state of the BGP session/the number of prefixes the router has received from a neighbor or peer group. When the maximum number (as set by the neighbor maximum-prefix command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is Idle.		
State/PfxRcd	Current state of the BGP session/the number of prefixes the router has received from a neighbor or peer group. When the maximum number (as set by the neighbor maximum-prefix command) is reached, the string "PfxRcd" appears in the entry, the neighbor is shut down, and the connection is Idle.				

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>bfd</div><div>To set the baseline Bidirectional Forwarding Detection (BFD) session parameters on an interface, use the bfd command in interface configuration mode. To remove the baseline BFD session parameters, use the no form of this command.</div><div><div>bfd interval milliseconds min_rx milliseconds multiplier multiplier-value</div><div>no bfd interval milliseconds min_rx milliseconds multiplier multiplier-value</div></div><div><div>Syntax Description</div><table><tr><td>interval milliseconds</td><td>Specifies the rate, in milliseconds, at which BFD control packets will be sent to BFD peers. The valid range for the <i>milliseconds</i> argument is from 50 to 999.</td></tr><tr><td>min_rx milliseconds</td><td>Specifies the rate, in milliseconds, at which BFD control packets will be expected to be received from BFD peers. The valid range for the <i>milliseconds</i> argument is from 50 to 999.</td></tr><tr><td>multiplier multiplier-value</td><td>Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD declares that the peer is unavailable and the Layer 3 BFD peer is informed of the failure. The valid range for the <i>multiplier-value</i> argument is from 3 to 50.</td></tr></table></div><div>Cisco IOS IP Routing: Protocol-Independent Command Reference (2013), at 9</div></div>	interval milliseconds	Specifies the rate, in milliseconds, at which BFD control packets will be sent to BFD peers. The valid range for the <i>milliseconds</i> argument is from 50 to 999.	min_rx milliseconds	Specifies the rate, in milliseconds, at which BFD control packets will be expected to be received from BFD peers. The valid range for the <i>milliseconds</i> argument is from 50 to 999.	multiplier multiplier-value	Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD declares that the peer is unavailable and the Layer 3 BFD peer is informed of the failure. The valid range for the <i>multiplier-value</i> argument is from 3 to 50.	<div><div>bfd</div><div>The bfd command configures BFD parameters for the configuration mode interface. All BFD sessions that pass through this interface will use these parameters. If custom parameters are not configured, the interface will use default values for BFD sessions passing through it.</div><div>For a BFD session to be established, BFD must be enabled for any routing protocol using BFD for failure detection.</div><div>The no bfd and default bfd commands return the BFD parameters on the configuration mode interface to default values by removing the corresponding bfd command from <i>running-config</i>.</div><div><div>Platformall</div><div>Command ModeInterface-Ethernet Configuration Interface-Loopback Configuration Interface-Management Configuration Interface-Port-channel Configuration Interface-VLAN Configuration</div></div><div>Command Syntax<div><div>bfd interval transmit_rate min_rx receive_minimum multiplier factor</div><div>no bfd</div><div>default bfd</div></div><div>Parameters<ul style="list-style-type: none"><div>transmit_rate specifies the rate in milliseconds at which BFD control packets will be sent to BFD peers. Values range from 50 to 60000; the default value is 300.</div><div>receive_minimum specifies the rate in milliseconds at which BFD control packets will be expected from BFD peers. Values range from 50 to 60000.</div><div>factor specifies the number of consecutive missed BFD control packets from a BFD peer that will designate the peer as unavailable and indicate failure to the Layer 3 BFD peer. Values range from 3 to 50.</div></div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1741.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1471.</div></div></div>
	interval milliseconds	Specifies the rate, in milliseconds, at which BFD control packets will be sent to BFD peers. The valid range for the <i>milliseconds</i> argument is from 50 to 999.						
	min_rx milliseconds	Specifies the rate, in milliseconds, at which BFD control packets will be expected to be received from BFD peers. The valid range for the <i>milliseconds</i> argument is from 50 to 999.						
multiplier multiplier-value	Specifies the number of consecutive BFD control packets that must be missed from a BFD peer before BFD declares that the peer is unavailable and the Layer 3 BFD peer is informed of the failure. The valid range for the <i>multiplier-value</i> argument is from 3 to 50.							

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>ip route</div><div>To establish static routes, use the <code>ip route</code> command in global configuration mode. To remove static routes, use the <code>no ip route</code> form of this command.</div><div><div><code>ip route</code> [vrf vrf-name] prefix mask {ip-address interface-type interface-number [ip-address]} [dhcp] [global] [distance] [multicast] [name next-hop-name] [permanent] track number [tag tag]</div><div><code>no ip route</code> [vrf vrf-name] prefix mask {ip-address interface-type interface-number [ip-address]} [dhcp] [global] [distance] multicast [name next-hop-name] [permanent] track number [tag tag]</div></div><div>Cisco IOS IP Routing: Protocol-Independent Command Reference (2013), at 62</div><div>If you specify an administrative distance, you are flagging a static route that can be overridden by dynamic information. For example, routes derived with Enhanced Interior Gateway Routing Protocol (EIGRP) have a default administrative distance of 100. To have a static route that would be overridden by an EIGRP dynamic route, specify an administrative distance greater than 100. Static routes have a default administrative distance of 1.</div></div>	<div><div>ip route</div><div>The <code>ip route</code> command creates a static route. The destination is a network segment; the next-hop address is either an IPv4 address or a routable port. When multiple routes exist to a destination prefix, the route with the lowest administrative distance takes precedence.</div><div>Static routes have a default administrative distance of 1. Assigning a higher administrative distance to a static route configures it to be overridden by dynamic routing data. For example, a static route with a distance value of 200 is overridden by OSPF intra-area routes with a default distance of 110.</div><div>...</div><div>Command Syntax</div><div><div><code>ip route</code> [VRF_INSTANCE] dest_net NEXTHOP [DISTANCE] [TAG_OPTION] [RT_NAME]</div><div><code>no ip route</code> [VRF_INSTANCE] dest_net [NEXTHOP] [DISTANCE]</div><div><code>default ip route</code> [VRF_INSTANCE] dest_net [NEXTHOP] [DISTANCE]</div></div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1287.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1082; Arista User Manual, v. 4.11.1 (1/11/13), at 860; Arista User Manual v. 4.10.3 (10/22/12), at 683.</div></div>
	Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div><div>show ipv6 route summary</div><div>Displays the current contents of the IPv6 routing table in summary format.</div></div><div>Cisco IOS IP Routing: Protocol-Independent Command Reference (2013), at 284</div></div>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Usage Guidelines Learn lists are a way to categorize learned traffic classes. In each learn list, different criteria for learning traffic classes including prefixes, application definitions, filters, and aggregation parameters can be configured. A traffic class is automatically learned by PIR based on each learn list criteria, and each learn list is configured with a sequence number. The sequence number determines the order in which learn list criteria are applied. Learn lists allow different PIR policies to be applied to each learn list; in previous releases the traffic classes could not be divided, and a PIR policy was applied to all the traffic classes profiled during one learning session.</p> <p>Cisco IOS Performance Routing Command Reference (2010), at 131.</p>	<p>Route maps define conditions for redistributing routes between routing protocols. A route map clause is identified by a name, filter type (permit or deny) and sequence number. Clauses with the same name are components of a single route map; the sequence number determines the order in which the clauses are compared to a route.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 894.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 773; Arista User Manual, v. 4.11.1 (1/11/13), at 602; Arista User Manual v. 4.10.3 (10/22/12), at 516; Arista User Manual v. 4.9.3.2 (5/3/12), at 439; Arista User Manual v. 4.8.2 (11/18/11), at 316.</p>
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Usage Guidelines The set interface command is entered on a master controller in PIR map configuration mode. This command can be used for PIR black hole filtering if the border routers detect a denial-of-service (DoS) attack by directing packets to the null interface. The null interface is a virtual network interface that is similar to the loopback interface. Whereas traffic to the loopback interface is directed to the router itself, traffic sent to the null interface is discarded. This interface is always up and can never forward or receive traffic; encapsulation always fails. The null interface functions similarly to the null devices available on most operating systems. Null interfaces are used as a low-overhead method of discarding unnecessary network traffic.</p> <p>Cisco IOS Performance Routing Command Reference (2010), at 226.</p>	<p>14.4.6 Null0 Interface</p> <p>The null0 interface is a virtual interface that drops all inbound packets. A null0 route is a network route whose destination is null0 interface. Inbound packets to a null0 interface are not forwarded to any valid address. Many interface configuration commands provide null0 as an interface option.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 633.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 502; Arista User Manual, v. 4.11.1 (1/11/13), at 397; Arista User Manual v. 4.10.3 (10/22/12), at 329.</p>

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<div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><div>snmp-server enable traps pfr</div><div>To enable Performance Routing (PFR) Simple Network Management Protocol (SNMP) notifications (traps and informs), use the <code>snmp-server enable traps pfr</code> command in global configuration mode. To disable PFR notifications, use the <code>no</code> form of this command.</div><div><div>snmp-server enable traps pfr</div><div>no snmp-server enable traps pfr</div></div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Command Default</div><div>PFR SNMP notifications are disabled.</div></div><div><div>Command Modes</div><div>Global configuration (config)</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>Cisco IOS XE Release 3.7S</td><td>This command was introduced.</td></tr><tr><td>15.3(2)T</td><td>This command was integrated into Cisco IOS Release 15.3(2)T.</td></tr></table></div><div><div>Usage Guidelines</div><div>Use this command to enable SNMP notifications for PFR activity.</div></div><div><div>Examples</div><div><div>This example shows how to enable PFR SNMP notifications:</div><div>Router(config)# snmp-server host 10.2.2.2 traps public pfr Router(config)# snmp-server enable traps pfr Router(config)# exit</div></div></div><div>Cisco IOS Performance Routing Command Reference (2010), at 372.</div></div>	Release	Modification	Cisco IOS XE Release 3.7S	This command was introduced.	15.3(2)T	This command was integrated into Cisco IOS Release 15.3(2)T.	<div><div>snmp-server enable traps</div><div>The <code>snmp-server enable traps</code> command enables the transmission of Simple Network Management Protocol (SNMP) notifications as traps or inform requests. This command enables both traps and inform requests for the specified notification types. The <code>snmp-server host</code> command specifies the notification type (traps or informs). Sending notifications requires at least one <code>snmp-server host</code> command.</div><div>The <code>snmp-server enable traps</code> and <code>no snmp-server enable traps</code> commands, without an MIB parameter, specifies the default notification trap generation setting for all MIBs. These commands, when specifying an MIB, controls notification generation for the specified MIB. The default <code>snmp-server enable traps</code> command resets notification generation to the default setting for the specified MIB.</div><div><div>Platformall</div><div>Command ModeGlobal Configuration</div></div><div><div>Command Syntax</div><div><div>snmp-server enable traps [trap_type]</div><div>no snmp-server enable traps [trap_type]</div><div>default snmp-server enable traps [trap_type]</div></div></div><div><div>Parameters</div><div><ul style="list-style-type: none"><code>trap_type</code> controls the generation of informs or traps for the specified MIB:<ul style="list-style-type: none"><no parameter> controls notifications for MIBs not covered by specific commands.<code>entity</code> controls entity-MIB modification notifications.<code>lldp</code> controls LLDP notifications.<code>msdpBackwardTransition</code> controls msdpBackwardTransition notifications.<code>msdpEstablished</code> controls msdpEstablished notifications.<code>snmp</code> controls SNMP-v2 notifications.<code>switchover</code> controls switchover notifications.<code>snmpConfigManEvent</code> controls snmpConfigManEvent notifications.<code>test</code> controls test traps.</div></div><div><div>Examples</div><div><ul style="list-style-type: none">These commands enables notification generation for all MIBs except spanning tree.<div><div>switch(config)#snmp-server enable traps</div><div>switch(config)#no snmp-server enable traps spanning-tree</div><div>switch(config)#</div></div>This command enables spanning-tree MIB notification generation, regardless of the default setting.<div><div>switch(config)#snmp-server enable traps spanning-tree</div><div>switch(config)#</div></div></div></div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1990.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1680; Arista User Manual, v. 4.11.1 (1/11/13), at 1365; Arista User Manual v. 4.10.3 (10/22/12), at 1132; Arista User Manual v. 4.9.3.2 (5/3/12), at 888; Arista</div></div>
	Release	Modification						
Cisco IOS XE Release 3.7S	This command was introduced.							
15.3(2)T	This command was integrated into Cisco IOS Release 15.3(2)T.							

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		User Manual v. 4.8.2 (11/18/11), at 696; Arista User Manual v. 4.7.3 (7/18/11), at 552.						
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>no snmp-server</p> <p>To disable Simple Network Management Protocol (SNMP) agent operation, use the no snmp-server command in global configuration mode.</p> <p>no snmp-server</p> <p>Syntax Description This command has no arguments or keywords.</p> <p>Command Default No default behavior or values.</p> <p>Command Modes Global configuration</p> <table border="1"> <thead> <tr> <th>Command History</th><th>Release</th><th>Modification</th></tr> </thead> <tbody> <tr> <td></td><td>10.0</td><td>This command was introduced.</td></tr> </tbody> </table> <p>Usage Guidelines This command disables all running versions of SNMP (SNMPv1, SNMPv2C, and SNMPv3) on the device.</p> <p>Examples The following example disables the current running version of SNMP:</p> <pre>Router(config)# no snmp-server</pre> <p>Cisco IOS SNMP Support Command Reference (2013), at 52.</p>	Command History	Release	Modification		10.0	This command was introduced.	<p>no snmp-server</p> <p>The no snmp-server and default snmp-server commands disable Simple Network Management Protocol (SNMP) agent operation by removing all snmp-server commands from <i>running-config</i>. SNMP is enabled with any snmp-server community or snmp-server user command.</p> <p>Platform all</p> <p>Command Mode Global Configuration</p> <p>Command Syntax</p> <p>no snmp-server default snmp-server</p> <p>Example</p> <ul style="list-style-type: none"> This command disables SNMP agent operation on the switch <pre>switch(config)#no snmp-server switch(config)#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1973.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1663; Arista User Manual, v. 4.11.1 (1/11/13), at 1350; Arista User Manual v. 4.10.3 (10/22/12), at 1117; Arista User Manual v. 4.9.3.2 (5/3/12), at 873; Arista User Manual v. 4.8.2 (11/18/11), at 681; Arista User Manual v. 4.7.3 (7/18/11), at 537.</p>
Command History	Release	Modification						
	10.0	This command was introduced.						

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Examples</p> <p>The following is sample output from the <code>show snmp</code> command:</p> <pre> Router# show snmp Chassis: 12161083 0 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 0 Number of requested variables 0 Number of altered variables 0 Get-request PDUs 0 Get-next PDUs 0 Set-request PDUs 0 Input queue packet drops (Maximum queue size 1000) 0 SNMP packets output 0 Too big errors (Maximum packet size 1500) 0 No such name errors 0 Bad values errors 0 General errors 0 Response PDUs 0 Trap PDUs SNMP logging: enabled SNMP trap Queue: 0 dropped due to resource failure. </pre> <p>Cisco IOS SNMP Support Command Reference (2013), at 83.</p>	<p>Example</p> <ul style="list-style-type: none"> This command configures <code>xyz-1234</code> as the chassis-ID string, then displays the result. <pre> switch(config)#snmp-server chassis-id xyz-1234 switch(config)#show snmp Chassis: xyz-1234 <---chassis ID 8 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 8 Number of requested variables 0 Number of altered variables 4 Get-request PDUs 4 Get-next PDUs 0 Set-request PDUs 21 SNMP packets output 0 Too big errors 0 No such name errors 0 Bad value errors 0 General errors 8 Response PDUs 0 Trap PDUs SNMP logging: enabled Logging to taccon.162 SNMP agent enabled switch(config)# </pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 1967-68.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1896; Arista User Manual v. 4.12.3 (7/17/13), at 1658; Arista User Manual, v. 4.11.1 (1/11/13), at 1344-45; Arista User Manual v. 4.10.3 (10/22/12), at 1111; Arista User Manual v. 4.9.3.2 (5/3/12), at 867; Arista User Manual v. 4.8.2 (11/18/11), at 678; Arista User Manual v. 4.7.3 (7/18/11), at 534.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>show snmp engineID</div> <div>To display the identification of the local Simple Network Management Protocol (SNMP) engine and all remote engines that have been configured on the router, use the show snmp engineID command in EXEC mode.</div> <div>show snmp engineID</div> <div>Syntax Description<div>This command has no arguments or keywords.</div></div> <div>Command Modes<div>EXEC</div></div> <div>Command History<table><tr><th>Release</th><th>Modification</th></tr><tr><td>12.0(3)T</td><td>This command was introduced.</td></tr><tr><td>12.2(33)SRA</td><td>This command was integrated into Cisco IOS Release 12.2(33)SRA.</td></tr><tr><td>12.2SX</td><td>This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.</td></tr></table></div> <div>Usage Guidelines<div>An SNMP engine is a copy of SNMP that can reside on a local or remote device.</div></div> <div>Examples<div>The following example specifies 0000000902000000C025808 as the local engineID and 123456789ABCDEF000000000 as the remote engine ID, 172.16.37.61 as the IP address of the remote engine (copy of SNMP) and 162 as the port from which the remote device is connected to the local device:</div><div>Router# show snmp engineID Local SNMP engineID: 0000000902000000C025808 Remote Engine ID IP-addr Port 123456789ABCDEF000000000 172.16.37.61 162 The table below describes the fields shown in the display.</div></div>	Release	Modification	12.0(3)T	This command was introduced.	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.	<div>show snmp engineID</div> <div>The show snmp engineID command displays the identification of the local Simple Network Management Protocol (SNMP) engine and of all remote engines that are configured on the switch.</div> <div>Platform all</div> <div>Command Mode EXEC</div> <div>Command Syntax<div>show snmp engineID</div></div> <div>Example<div><ul style="list-style-type: none">This command displays the ID of the local SNMP engine.<div>switch# show snmp engineid Local SNMP EngineID: f5717f001c730436d700 switch></div></div></div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1978.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1668; Arista User Manual, v. 4.11.1 (1/11/13), at 1355; Arista User Manual v. 4.10.3 (10/22/12), at 1122; Arista User Manual v. 4.9.3.2 (5/3/12), at 878; Arista User Manual v. 4.8.2 (11/18/11), at 686; Arista User Manual v. 4.7.3 (7/18/11), at 542.</div>
	Release	Modification								
12.0(3)T	This command was introduced.									
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.									
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.									
Cisco IOS SNMP Support Command Reference (2013), at 91.										

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>Related Commands</div> <table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>snmp-server engineID local</td><td>Configures a name for either the local or remote SNMP engine on the router.</td></tr></tbody></table> <p>Cisco IOS SNMP Support Command Reference (2013), at 92.</p>	Command	Description	snmp-server engineID local	Configures a name for either the local or remote SNMP engine on the router.	<p>Configuring the Engine ID</p> <p>The snmp-server engineID remote command configures the name for the local or remote Simple Network Management Protocol (SNMP) engine. An SNMP engine ID is a name for the local or remote SNMP engine.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1966.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1894; Arista User Manual v. 4.12.3 (7/17/13), at 1656; Arista User Manual, v. 4.11.1 (1/11/13), at 1343; Arista User Manual v. 4.10.3 (10/22/12), at 1109; Arista User Manual v. 4.9.3.2 (5/3/12), at 865; Arista User Manual v. 4.8.2 (11/18/11), at 676; Arista User Manual v. 4.7.3 (7/18/11), at 432.</p>
	Command	Description				
snmp-server engineID local	Configures a name for either the local or remote SNMP engine on the router.					
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><td>security model</td><td>The security model used by the group, either v1, v2c, or v3.</td></tr></table> <p>Cisco IOS SNMP Support Command Reference (2013), at 92.</p>	security model	The security model used by the group, either v1, v2c, or v3.	<ul style="list-style-type: none">• VERSION the security model used by the group.<ul style="list-style-type: none">— v1 SNMPv1. Uses a community string match for authentication.— v2c SNMPv2c. Uses a community string match for authentication.— v3 no auth SNMPv3. Uses a username match for authentication.— v3 auth SNMPv3. HMAC-MD5 or HMAC-SHA authentication.— v3 priv SNMPv3. HMAC-MD5 or HMAC-SHA authentication. AES or DES encryption. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1994.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1684; Arista User Manual, v. 4.11.1 (1/11/13), at 1369; Arista User Manual v. 4.10.3 (10/22/12), at 1136; Arista User Manual v. 4.9.3.2 (5/3/12), at 892; Arista User Manual v. 4.8.2 (11/18/11), at 699; Arista User Manual v. 4.7.3 (7/18/11), at 555.</p>		
security model	The security model used by the group, either v1, v2c, or v3.					

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<div>Cisco IOS 15.4</div> <div>Effective date of registration: 11/26/2014</div>	<div><div>show snmp host</div><div>To display the recipient details for Simple Network Management Protocol (SNMP) notification operations, use the <code>show snmp host</code> command in privileged EXEC mode.</div><div><div>show snmp host</div></div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Command Default</div><div>The information configured for SNMP notification operation is displayed.</div></div><div><div>Command Modes</div><div>Privileged EXEC (#)</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>12.4(12)T</td><td>This command was introduced.</td></tr><tr><td>12.2(31)SB</td><td>This command was integrated into Cisco IOS Release 12.2(31)SB2.</td></tr><tr><td>12.2SX</td><td>This command was integrated into Cisco IOS Release 12.2SX.</td></tr></table></div><div><div>Usage Guidelines</div><div>The <code>show snmp host</code> command displays details such as IP address of the Network Management System (NMS), notification type, SNMP version, and the port number of the NMS. To configure these details, use the <code>snmp-server host</code> command.</div></div><div><div>Examples</div><div>The following is sample output from the <code>show snmp host</code> command.</div><div><pre>Router#show snmp host Notification host: 10.2.28.6 udp-port: 162 type: inform user: public security model: v2c traps: 00000000.00000000.00000000</pre><div>The table below describes the significant fields shown in the display.</div><div><div>Table 5: show snmp host Field Descriptions</div><table><tr><th>Field</th><th>Description</th></tr><tr><td>Notification host</td><td>Displays the IP address of the host for which the notification is generated.</td></tr><tr><td>udp-port</td><td>Displays the port number.</td></tr><tr><td>type</td><td>Displays the type of notification.</td></tr></table><table><tr><th>Field</th><th>Description</th></tr><tr><td>user</td><td>Displays the access type of the user for which the notification is generated.</td></tr><tr><td>security model</td><td>Displays the SNMP version used to send notifications.</td></tr><tr><td>traps</td><td>Displays details of the notification generated.</td></tr></table></div></div><div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>snmp-server host</td><td>Configures the recipient details for SNMP notification operations.</td></tr></table></div></div></div>	Release	Modification	12.4(12)T	This command was introduced.	12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB2.	12.2SX	This command was integrated into Cisco IOS Release 12.2SX.	Field	Description	Notification host	Displays the IP address of the host for which the notification is generated.	udp-port	Displays the port number.	type	Displays the type of notification.	Field	Description	user	Displays the access type of the user for which the notification is generated.	security model	Displays the SNMP version used to send notifications.	traps	Displays details of the notification generated.	Command	Description	snmp-server host	Configures the recipient details for SNMP notification operations.	<div><div>show snmp host</div><div>The <code>show snmp host</code> command displays the recipient details for Simple Network Management Protocol (SNMP) notification operations. Details that the command displays include IP address and port number of the Network Management System (NMS), notification type, and SNMP version.</div><div><div>Platform</div><div>all</div></div><div><div>Command Mode</div><div>EXEC</div></div><div><div>Command Syntax</div><div><div>show snmp host</div></div></div><div><div>Field Descriptions</div><div><ul style="list-style-type: none"><div>Notification host</div> IP address of the host for which the notification is generated.<div>udp-port</div> port number.<div>type</div> notification type.<div>user</div> access type of the user for which the notification is generated.<div>security model</div> SNMP version used to send notifications.<div>traps</div> details of the notification generated.</div></div><div><div>Example</div><div><ul style="list-style-type: none">This command displays the hosts configured on the switch.</div><div><pre>switch#show snmp host Notification host: 172.22.22.20 udp-port: 162 type: trap user: public security model: v2c switch></pre></div></div></div>
	Release	Modification																												
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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>show snmp location</div><div>To display the Simple Network Management Protocol (SNMP) system location string, use the show snmp location command in privileged EXEC mode.</div><div>show snmp location</div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Command Default</div><div>The SNMP system location information is displayed.</div></div><div><div>Command Modes</div><div>Privileged EXEC (#)</div></div><div><div>Command History</div><table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>12.4(12)T</td><td>This command was introduced.</td></tr><tr><td>12.2(31)SB</td><td>This command was integrated into Cisco IOS Release 12.2(31)SB2.</td></tr><tr><td>12.2SX</td><td>This command was integrated into Cisco IOS Release 12.2SX.</td></tr></tbody></table></div><div><div>Usage Guidelines</div><div>To configure system location details, use the snmp-server location command.</div></div><div>Cisco IOS SNMP Support Command Reference (2013), at 97.</div></div>	Release	Modification	12.4(12)T	This command was introduced.	12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB2.	12.2SX	This command was integrated into Cisco IOS Release 12.2SX.	<div><div>show snmp location</div><div>The show snmp location command displays the Simple Network Management Protocol (SNMP) system location string. The snmp-server location command configures system location details. The command has no effect if a location string was not previously configured.</div><div><div>Platform</div><div>all</div></div><div><div>Command Mode</div><div>EXEC</div></div><div><div>Command Syntax</div><div>show snmp location</div></div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1980.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1671; Arista User Manual, v. 4.11.1 (1/11/13), at 1358; Arista User Manual v. 4.10.3 (10/22/12), at 1125; Arista User Manual v. 4.9.3.2 (5/3/12), at 881; Arista User Manual v. 4.8.2 (11/18/11), at 689; Arista User Manual v. 4.7.3 (7/18/11), at 545.</div></div>
	Release	Modification								
12.4(12)T	This command was introduced.									
12.2(31)SB	This command was integrated into Cisco IOS Release 12.2(31)SB2.									
12.2SX	This command was integrated into Cisco IOS Release 12.2SX.									
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>SNMP management information is viewed as a collection of managed objects, residing in a virtual information store, termed the Management Information Base (MIB). Collections of related objects are defined in MIB modules. These modules are written using a subset of OSI's Abstract Syntax Notation One (ASN.1), termed the Structure of Management Information (SMI).</div> <div>Cisco IOS SNMP Support Command Reference (2013), at 98..</div>	<div><div>Management Information Base (MIB):</div><div>The MIB stores network management information, which consists of collections of managed objects. Within the MIB are collections of related objects, defined in MIB modules.</div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1961.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1651; Arista User Manual, v. 4.11.1 (1/11/13), at 1339; Arista User Manual v. 4.10.3 (10/22/12), at 1105; Arista User Manual v. 4.9.3.2 (5/3/12), at 861; Arista User Manual v. 4.8.2 (11/18/11), at 673; Arista User Manual v. 4.7.3 (7/18/11), at 529.</div></div>								

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<div data-bbox="302 280 1119 370"> <div>show snmp group</div> <div>Displays the names of configured SNMP groups, the security model being used, the status of the different views, and the storage type of each group.</div> </div> <p>Cisco IOS SNMP Support Command Reference (2013), at 123.</p>	<div data-bbox="1178 280 2053 396"> <div>show snmp group</div> <div>The show snmp group command displays the names of configured SNMP groups along with the security model, and view status of each group.</div> </div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1971</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1669; Arista User Manual, v. 4.11.1 (1/11/13), at 1356; Arista User Manual v. 4.10.3 (10/22/12), at 1123; Arista User Manual v. 4.9.3.2 (5/3/12), at 879; Arista User Manual v. 4.8.2 (11/18/11), at 687; Arista User Manual v. 4.7.3 (7/18/11), at 543.</p>
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<div data-bbox="302 708 1119 769"> <div>show snmp view</div> <div>Displays the family name, storage type, and status of an SNMP configuration and associated MIB</div> </div> <p>Cisco IOS SNMP Support Command Reference (2013), at 123.</p>	<div data-bbox="1178 708 2053 834"> <div>show snmp view</div> <div>The show snmp view command displays the family name, storage type, and status of a Simple Network Management Protocol (SNMP) configuration and the associated MIB. SNMP views are configured with the snmp-server view command.</div> </div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1986.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1914; Arista User Manual v. 4.12.3 (7/17/13), at 1676; Arista User Manual, v. 4.11.1 (1/11/13), at 1361; Arista User Manual v. 4.10.3 (10/22/12), at 1128; Arista User Manual v. 4.9.3.2 (5/3/12), at 884; Arista User Manual v. 4.8.2 (11/18/11), at 692; Arista User Manual v. 4.7.3 (7/18/11), at 548.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><td>snmp-server group</td><td>Configures a new SNMP group or a table that maps SNMP users to SNMP views.</td></tr><tr><td>snmp-server trap authentication vrf</td><td>Controls VRF-specific SNMP authentication failure notifications.</td></tr><tr><td>snmp-server user</td><td>Configures a new user to an SNMP group.</td></tr></table>	snmp-server group	Configures a new SNMP group or a table that maps SNMP users to SNMP views.	snmp-server trap authentication vrf	Controls VRF-specific SNMP authentication failure notifications.	snmp-server user	Configures a new user to an SNMP group.	<p>Configuring the Group</p> <p>An SNMP group is a table that maps SNMP users to SNMP views. The snmp-server group command configures a new SNMP group.</p> <p>Example</p> <ul style="list-style-type: none">This command configures normal_one as an SNMPv3 group (authentication and encryption) that provides access to the all-items read view. <pre>switch(config)#snmp-server group normal_one v3 priv read all-items switch(config)#</pre> <p>Configuring the User</p> <p>An SNMP user is a member of an SNMP group. The snmp-server user command adds a new user to an SNMP group and configures that user's parameters. To configure a remote user, specify the IP address or port number of the device where the user's remote SNMP agent resides.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1966.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1894; Arista User Manual v. 4.12.3 (7/17/13), at 1656; Arista User Manual, v. 4.11.1 (1/11/13), at 1343-44; Arista User Manual v. 4.10.3 (10/22/12), at 1109-10; Arista User Manual v. 4.9.3.2 (5/3/12), at 865; Arista User Manual v. 4.8.2 (11/18/11), at 677; Arista User Manual v. 4.7.3 (7/18/11), at 533.</p>
	snmp-server group	Configures a new SNMP group or a table that maps SNMP users to SNMP views.						
	snmp-server trap authentication vrf	Controls VRF-specific SNMP authentication failure notifications.						
	snmp-server user	Configures a new user to an SNMP group.						


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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>snmp trap link-status</p> <p>To enable Simple Network Management Protocol (SNMP) link trap generation, use the snmp trap link-status command in either interface configuration mode or service instance configuration mode. To disable SNMP link trap generation, use the no form of this command.</p> <p>snmp trap link-status [permit duplicates] no snmp trap link-status [permit duplicates]</p> <p>Cisco IOS SNMP Support Command Reference (2013), at 130.</p>	<p>snmp trap link-status</p> <p>The snmp trap link-status command enables Simple Network Management Protocol (SNMP) link-status trap generation on the configuration mode interface. The generation of link-status traps is enabled by default. If SNMP link-trap generation was previously disabled, this command removes the corresponding no snmp link-status statement from the configuration to re-enable link-trap generation.</p> <p>The no snmp trap link-status command disables SNMP link trap generation on the configuration mode interface.</p> <p>The snmp trap link-status and default snmp trap link-status commands restore the default behavior by removing the no snmp trap link-status command from <i>running-config</i>. Only the no form of this command is visible in <i>running-config</i>.</p> <p>Platform all Command Mode Interface-Ethernet Configuration Interface-Loopback Configuration Interface-Management Configuration Interface-Port-channel Configuration Interface-VLAN Configuration Interface-VXLAN Configuration</p> <p>Command Syntax</p> <p>snmp trap link-status no snmp trap link-status default snmp trap link-status</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1966.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1692; Arista User Manual, v. 4.11.1 (1/11/13), at 1377; Arista User Manual v. 4.10.3 (10/22/12), at 1144; Arista User Manual v. 4.9.3.2 (5/3/12), at 898; Arista User Manual v. 4.8.2 (11/18/11), at 705; Arista User Manual v. 4.7.3 (7/18/11), at 561.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<div data-bbox="304 277 1115 347"> <div>snmp-server host</div> <div>Specifies the targeted recipient of an SNMP notification operation.</div> </div> <p>Cisco IOS SNMP Support Command Reference (2013), at 191.</p>	<p>Configuring the Host</p> <p>The <code>snmp-server host</code> command specifies the recipient of a SNMP notification. An SNMP host is the recipient of an SNMP trap operation. The <code>snmp-server host</code> command sets the community string if it was not previously configured.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1967.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1895; Arista User Manual v. 4.12.3 (7/17/13), at 1656; Arista User Manual, v. 4.11.1 (1/11/13), at 1344; Arista User Manual v. 4.10.3 (10/22/12), at 1110; Arista User Manual v. 4.9.3.2 (5/3/12), at 866; Arista User Manual v. 4.8.2 (11/18/11), at 677; Arista User Manual v. 4.7.3 (7/18/11), at 533.</p>
<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<div data-bbox="304 691 1115 735"> <div>Usage Guidelines</div> <div>SNMP notifications can be sent as traps or inform requests. This command enables both traps and inform requests.</div> </div> <p>Cisco IOS SNMP Support Command Reference (2013), at 216.</p>	<p>The <code>snmp-server enable traps</code> command enables the transmission of Simple Network Management Protocol (SNMP) notifications as traps or inform requests. This command enables both traps and inform requests for the specified notification types. The <code>snmp-server host</code> command specifies the notification type (traps or informs). Sending notifications requires at least one <code>snmp-server host</code> command.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1990.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1680; Arista User Manual, v. 4.11.1 (1/11/13), at 1365; Arista User Manual v. 4.10.3 (10/22/12), at 1132; Arista User Manual v. 4.9.3.2 (5/3/12), at 888; Arista User Manual v. 4.8.2 at 696; Arista User Manual v. 4.7.3 (7/18/11), at 552.</p>

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		Manual v. 4.7.3 (7/18/11), at 553-54.				
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show snmp engineID</td><td>Displays the identification of the local SNMP engine and all remote engines that have been configured on the router.</td></tr></table> Cisco IOS SNMP Support Command Reference (2013), at 340/	Command	Description	show snmp engineID	Displays the identification of the local SNMP engine and all remote engines that have been configured on the router.	show snmp engineID The show snmp engineID command displays the identification of the local Simple Network Management Protocol (SNMP) engine and of all remote engines that are configured on the switch. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1978. <i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1668; Arista User Manual, v. 4.11.1 (1/11/13), at 1355; Arista User Manual v. 4.10.3 (10/22/12), at 1122; Arista User Manual v. 4.9.3.2 (5/3/12), at 878; Arista User Manual v. 4.8.2 (11/18/11), at 686; Arista User Manual v. 4.7.3 (7/18/11), at 542.
	Command	Description				
show snmp engineID	Displays the identification of the local SNMP engine and all remote engines that have been configured on the router.					

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>snmp-server group</div> <div>To configure a new Simple Network Management Protocol (SNMP) group, use the snmp-server group command in global configuration mode. To remove a specified SNMP group, use the no form of this command.</div> <div>snmp-server group group-name {v1 v2c v3 {auth noauth priv}} [context context-name] [read read-view] [write write-view] [notify notify-view] [access {ipv6 named-access-list} [acl-number] acl-name]] no snmp-server group group-name {v1 v2c v3 {auth noauth priv}} [context context-name]</div> <div>Syntax Description</div> <table><tr><td>group-name</td><td>Name of the group.</td></tr><tr><td>v1</td><td>Specifies that the group is using the SNMPv1 security model. SNMPv1 is the least secure of the possible SNMP security models.</td></tr><tr><td>v2c</td><td>Specifies that the group is using the SNMPv2c security model. The SNMPv2c security model allows informs to be transmitted and supports 64-character strings.</td></tr><tr><td>v3</td><td>Specifies that the group is using the SNMPv3 security model. SNMPv3 is the most secure of the supported security models. It allows you to explicitly configure authentication characteristics.</td></tr><tr><td>auth</td><td>Specifies authentication of a packet without encrypting it.</td></tr><tr><td>noauth</td><td>Specifies no authentication of a packet.</td></tr><tr><td>priv</td><td>Specifies authentication of a packet with encryption.</td></tr><tr><td>context</td><td>(Optional) Specifies the SNMP context to associate with this SNMP group and its views.</td></tr><tr><td>context-name</td><td>(Optional) Context name.</td></tr><tr><td>read</td><td>(Optional) Specifies a read view for the SNMP group. This view enables you to view only the contents of the agent.</td></tr></table>	group-name	Name of the group.	v1	Specifies that the group is using the SNMPv1 security model. SNMPv1 is the least secure of the possible SNMP security models.	v2c	Specifies that the group is using the SNMPv2c security model. The SNMPv2c security model allows informs to be transmitted and supports 64-character strings.	v3	Specifies that the group is using the SNMPv3 security model. SNMPv3 is the most secure of the supported security models. It allows you to explicitly configure authentication characteristics.	auth	Specifies authentication of a packet without encrypting it.	noauth	Specifies no authentication of a packet.	priv	Specifies authentication of a packet with encryption.	context	(Optional) Specifies the SNMP context to associate with this SNMP group and its views.	context-name	(Optional) Context name.	read	(Optional) Specifies a read view for the SNMP group. This view enables you to view only the contents of the agent.	<div>snmp-server group</div> <div>The snmp-server group command configures a new Simple Network Management Protocol (SNMP) group or modifies an existing group. An SNMP group is a data structure that user statements reference to map SNMP users to SNMP contexts and views, providing a common access policy to the specified users.</div> <div>An SNMP context is a collection of management information items accessible by an SNMP entity. Each item of may exist in multiple contexts. Each SNMP entity can access multiple contexts. A context is identified by the EngineID of the hosting device and a context name.</div> <div>The no snmp-server group and default snmp-server group commands delete the specified group by removing the corresponding snmp-server group command from the configuration.</div> <div>Platformall Command ModeGlobal Configuration</div> <div>Command Syntax</div> <div>snmp-server group group_name VERSION [CNTX] [READ] [WRITE] [NOTIFY] no snmp-server group group_name VERSION default snmp-server group group_name VERSION</div> <div>Parameters</div> <div><ul style="list-style-type: none">group_name the name of the group.VERSION the security model used by the group.<ul style="list-style-type: none">v1 SNMPv1. Uses a community string match for authentication.v2c SNMPv2c. Uses a community string match for authentication.v3 no auth SNMPv3. Uses a username match for authentication.v3 auth SNMPv3. HMAC-MD5 or HMAC-SHA authentication.v3 priv SNMPv3. HMAC-MD5 or HMAC-SHA authentication. AES or DES encryption.CNTX associates the SNMP group to an SNMP context.<ul style="list-style-type: none"><no parameter> command does not associate group with an SNMP context.context context_name associates group with context specified by context_name.READ specifies read view for SNMP group.<ul style="list-style-type: none"><no parameter> command does not specify read view.read read_name read view specified by read_name (string – maximum 64 characters).WRITE specifies write view for SNMP group.<ul style="list-style-type: none"><no parameter> command does not specify write view.write write_name write view specified by write_name (string – maximum 64 characters).NOTIFY specifies notify view for SNMP group.<ul style="list-style-type: none"><no parameter> command does not specify notify view.notify notify_name notify view specified by notify_name (string – maximum 64 characters).</div>
	group-name	Name of the group.																				
v1	Specifies that the group is using the SNMPv1 security model. SNMPv1 is the least secure of the possible SNMP security models.																					
v2c	Specifies that the group is using the SNMPv2c security model. The SNMPv2c security model allows informs to be transmitted and supports 64-character strings.																					
v3	Specifies that the group is using the SNMPv3 security model. SNMPv3 is the most secure of the supported security models. It allows you to explicitly configure authentication characteristics.																					
auth	Specifies authentication of a packet without encrypting it.																					
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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>read-view</div><div>(Optional) String of a maximum of 64 characters that is the name of the view. The default is that the read-view is assumed to be every object belonging to the Internet object identifier (OID) space (1.3.6.1), unless the read option is used to override this state.</div></div>	Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1994. <i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1684; Arista User Manual, v. 4.11.1 (1/11/13), at 1369; Arista User Manual v. 4.10.3 (10/22/12), at 1136; Arista User Manual v. 4.9.3.2 (5/3/12), at 892; Arista User Manual v. 4.8.2 (11/18/11), at 699; Arista User Manual v. 4.7.3 (7/18/11), at 555.
	<div><div>write</div><div>(Optional) Specifies a write view for the SNMP group. This view enables you to enter data and configure the contents of the agent.</div></div>	
	<div><div>write-view</div><div>(Optional) String of a maximum of 64 characters that is the name of the view. The default is that nothing is defined for the write view (that is, the null OID). You must configure write access.</div></div>	
	<div><div>notify</div><div>(Optional) Specifies a notify view for the SNMP group. This view enables you to specify a notify, inform, or trap.</div></div>	
	<div><div>notify-view</div><div>(Optional) String of a maximum of 64 characters that is the name of the view. By default, nothing is defined for the notify view (that is, the null OID) until the snmp-server host command is configured. If a view is specified in the snmp-server group command, any notifications in that view that are generated will be sent to all users associated with the group (provided a SNMP server host configuration exists for the user). Cisco recommends that you let the software autogenerate the notify view. See the "Configuring Notify Views" section in this document.</div></div>	
	<div><div>access</div><div>(Optional) Specifies a standard access control list (ACL) to associate with the group.</div></div>	
	<div><div>ipv6</div><div>(Optional) Specifies an IPv6 named access list. If both IPv6 and IPv4 access lists are indicated, the IPv6 named access list must appear first in the list.</div></div>	
	<div><div>named-access-list</div><div>(Optional) Name of the IPv6 access list.</div></div>	
	<div><div>acl-number</div><div>(Optional) The acl-number argument is an integer from 1 to 99 that identifies a previously configured standard access list.</div></div>	
Cisco IOS SNMP Support Command Reference (2013), at 343-44.		

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div></div><div>snmp-server host</div></div> <table><thead><tr><th>Release</th><th>Modification</th></tr></thead><tbody><tr><td>Cisco IOS XE Release 2.1</td><td>This command was integrated into Cisco IOS XE Release 2.1.</td></tr><tr><td>15.2(1)S</td><td>This command was modified. The p2mp-traffic-eng notification-type keyword was added.</td></tr></tbody></table> <div><div>Usage Guidelines</div><div>If you enter this command with no optional keywords, the default is to send all notification-type traps to the host. No informs will be sent to the host. The no snmp-server host command with no keywords disables traps, but not informs, to the host. To disable informs, use the no snmp-server host informs command.</div></div> <div><div>Note</div><div>If a community string is not defined using the snmp-server community command prior to using this command, the default form of the snmp-server community command will automatically be inserted into the configuration. The password (community string) used for this automatic configuration of the snmp-server community command will be the same as that specified in the snmp-server host command. This automatic command insertion and use of passwords is the default behavior for Cisco IOS Release 12.0(3) and later releases. However, in Cisco IOS Release 12.2(33)SRE and later releases, you must manually configure the snmp-server community command. That is, the snmp-server community command will not be seen in the configuration.</div></div>	Release	Modification	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.	15.2(1)S	This command was modified. The p2mp-traffic-eng notification-type keyword was added.	<div><div>snmp-server host</div><p>The snmp-server host command specifies the recipient of Simple Network Management Protocol (SNMP) notifications. Recipients are denoted by host location and community string. The command also specifies the type of SNMP notifications that are sent: a <i>trap</i> is an unsolicited notification; an <i>inform</i> is a trap that includes a request for a confirmation that the message is received.</p><p>The configuration can contain multiple statements to the same host location with different community strings. For instance, a configuration can simultaneously contain all of the following:</p><ul style="list-style-type: none">snmp-server host host-1 version 2c comm-1snmp-server host host-1 informs version 2c comm-2snmp-server host host-1 version 2c comm-3 udp-port 666snmp-server host host-1 version 3 auth comm-3<p>The no snmp-server host and default snmp-server host commands remove the specified host by deleting the corresponding snmp-server host statement from the configuration. When removing a statement, the host (address and port) and community string must be specified.</p><div><div>Platform</div><div>all</div><div>Command Mode</div><div>Global Configuration</div></div><p>Command Syntax</p><pre>snmp-server host host_id [VRF_INST] [MESSAGE] [VERSION] comm_str [PORT] no snmp-server host host_id [VRF_INST] [MESSAGE] [VERSION] comm_str [PORT] default snmp-server host host_id [VRF_INST] [MESSAGE] [VERSION] comm_str [PORT]</pre><p>Parameters</p><ul style="list-style-type: none">host_id hostname or IP address of the targeted recipient.VRF_INST specifies the VRF instance being modified.<ul style="list-style-type: none"><no parameter> changes are made to the default VRF.vrf vrf_name changes are made to the specified user-defined VRF.MESSAGE message type that is sent to the host.<ul style="list-style-type: none"><no parameter> sends SNMP traps to host (default).informs sends SNMP informs to host.traps sends SNMP traps to host.VERSION SNMP version. Options include:<ul style="list-style-type: none"><no parameter> SNMPv2c (default).version 1 SNMPv1; option not available with informs.version 2c SNMPv2c.version 3 noauth SNMPv3; enables user-name match authentication.version 3 auth SNMPv3; enables MD5 and SHA packet authentication.version 3 priv SNMPv3. HMAC-MD5 or HMAC-SHA authentication. AES or DES encryption.comm_str community string (used as password) sent with the notification operation.<p>Although this string can be set with the snmp-server host command, the preferred method is defining it with the snmp-server community command prior to using this command.</p></div>
	Release	Modification						
	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.						
15.2(1)S	This command was modified. The p2mp-traffic-eng notification-type keyword was added.							
	Cisco IOS SNMP Support Command Reference (2013), at 354.	Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1995.						
		See also Arista User Manual v. 4.12.3 (7/17/13), at 1685; Arista User						

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		Manual, v. 4.11.1 (1/11/13), at 1370; Arista User Manual v. 4.10.3 (10/22/12), at 1137; Arista User Manual v. 4.9.3.2 (5/3/12), at 893; Arista User Manual v. 4.8.2 (11/18/11), at 700; Arista User Manual v. 4.7.3 (7/18/11), at 556.
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>SNMP notifications can be sent as traps or inform requests. Traps are unreliable because the receiver does not send acknowledgments when it receives traps. The sender cannot determine if the traps were received. However, an SNMP entity that receives an inform request acknowledges the message with an SNMP response protocol data unit (PDU). If the sender never receives the response, the inform request can be sent again. Thus, informs are more likely to reach their intended destination than traps.</p> <p>Compared to traps, informs consume more resources in the agent and in the network. Unlike a trap, which is discarded as soon as it is sent, an inform request must be held in memory until a response is received or the request times out. Also, traps are sent only once; an inform may be tried several times. The retries increase traffic and contribute to a higher overhead on the network.</p> <p>Cisco IOS SNMP Support Command Reference (2013), at 354.</p>	<p>SNMP notifications are messages, sent by the agent, to inform managers of an event or a network condition. A <i>trap</i> is an unsolicited notification. An <i>inform</i> (or inform request) is a trap that includes a request for a confirmation that the message is received. Events that a notification can indicate include improper user authentication, restart, and connection losses.</p> <p>Traps are less reliable than informs because the receiver does not send any acknowledgment. However, traps are often preferred because informs consume more switch and network resources. A trap is sent only once and is discarded as soon as it is sent. An inform request remains in memory until a response is received or the request times out. An inform may be retried several times, increasing traffic and contributing to higher network overhead.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1963.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1653; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>snmp-server source-interface</p> <p>To specify the interface from which a Simple Network Management Protocol (SNMP) trap originates the informs or traps, use the snmp-server source-interface command in global configuration mode. To remove the source designation, use the no form of this command.</p> <p>snmp-server source-interface {traps informs} <i>interface</i> no snmp-server source-interface {traps informs} [<i>interface</i>]</p> <p>Cisco IOS SNMP Support Command Reference (2013), at 376.</p>	<p>snmp-server source-interface</p> <p>The snmp-server source-interface command specifies the interface from which a Simple Network Management Protocol (SNMP) trap originates the informs or traps.</p> <p>The no snmp-server source-interface and default snmp-server source-interface commands remove the inform or trap source assignment by removing the snmp-server source-interface command from running-config.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>snmp-server source-interface <i>INTERFACE</i> no snmp-server source-interface default snmp-server source-interface</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1967.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1688; Arista User Manual, v. 4.11.1 (1/11/13), at 1373; Arista User Manual v. 4.10.3 (10/22/12), at 1140; Arista User Manual v. 4.9.3.2 (5/3/12), at 895; Arista User Manual v. 4.8.2 (11/18/11), at 702; Arista User Manual v. 4.7.3 (7/18/11), at 558.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div><div>snmp-server user</div><div><p>To configure a new user to a Simple Network Management Protocol (SNMP) group, use the <code>snmp-server user</code> command in global configuration mode. To remove a user from an SNMP group, use the <code>no</code> form of this command.</p><pre>snmp-server user username group-name [remote host [udp-port port] [vrf vrf-name]] {v1 v2c v3 [encrypted] [auth {md5 sha} auth-password]} [access [ipv6 naci] [priv {des 3des aes {128 192 256}} privpassword] {acl-number acl-name}]</pre><pre>no snmp-server user username group-name [remote host [udp-port port] [vrf vrf-name]] {v1 v2c v3 [encrypted] [auth {md5 sha} auth-password]} [access [ipv6 naci] [priv {des 3des aes {128 192 256}} privpassword] {acl-number acl-name}]</pre></div></div> <div><div>Syntax Description</div><table><tr><td>username</td><td>Name of the user on the host that connects to the agent.</td></tr><tr><td>group-name</td><td>Name of the group to which the user belongs.</td></tr><tr><td>remote</td><td>(Optional) Specifies a remote SNMP entity to which the user belongs, and the hostname or IPv6 address or IPv4 IP address of that entity. If both an IPv6 address and IPv4 IP address are being specified, the IPv6 host must be listed first.</td></tr><tr><td>host</td><td>(Optional) Name or IP address of the remote SNMP host.</td></tr><tr><td>udp-port</td><td>(Optional) Specifies the User Datagram Protocol (UDP) port number of the remote host.</td></tr><tr><td>port</td><td>(Optional) Integer value that identifies the UDP port. The default is 162.</td></tr><tr><td>vrf</td><td>(Optional) Specifies an instance of a routing table.</td></tr><tr><td>vrf-name</td><td>(Optional) Name of the Virtual Private Network (VPN) routing and forwarding (VRF) table to use for storing data.</td></tr><tr><td>v1</td><td>Specifies that SNMPv1 should be used.</td></tr><tr><td>v2c</td><td>Specifies that SNMPv2c should be used.</td></tr><tr><td>v3</td><td>Specifies that the SNMPv3 security model should be used. Allows the use of the encrypted keyword or auth keyword or both.</td></tr></table></div> <div><div>Cisco IOS SNMP Support Command Reference (2013), at 394.</div></div>	username	Name of the user on the host that connects to the agent.	group-name	Name of the group to which the user belongs.	remote	(Optional) Specifies a remote SNMP entity to which the user belongs, and the hostname or IPv6 address or IPv4 IP address of that entity. If both an IPv6 address and IPv4 IP address are being specified, the IPv6 host must be listed first.	host	(Optional) Name or IP address of the remote SNMP host.	udp-port	(Optional) Specifies the User Datagram Protocol (UDP) port number of the remote host.	port	(Optional) Integer value that identifies the UDP port. The default is 162.	vrf	(Optional) Specifies an instance of a routing table.	vrf-name	(Optional) Name of the Virtual Private Network (VPN) routing and forwarding (VRF) table to use for storing data.	v1	Specifies that SNMPv1 should be used.	v2c	Specifies that SNMPv2c should be used.	v3	Specifies that the SNMPv3 security model should be used. Allows the use of the encrypted keyword or auth keyword or both.	<div><div>snmp-server user</div><div><p>The <code>snmp-server user</code> command adds a user to a Simple Network Management Protocol (SNMP) group or modifies an existing user's parameters.</p><p>To configure a remote user, specify the IP address or port number of the device where the user's remote SNMP agent resides. A remote agent's engine ID must be configured before remote users for that agent are configured. A user's authentication and privacy digests are derived from the engine ID and the user's password. The configuration command fails if the remote engine ID is not configured first.</p><p>The <code>no snmp-server user</code> and <code>default snmp-server user</code> commands remove the user from an SNMP group by deleting the user command from <code>running-config</code>.</p><div><div>Platformall</div><div>Command ModeGlobal Configuration</div></div><div><div>Command Syntax</div><pre>snmp-server user user name group name [AGENT] VERSION [ENGINE] [SECURITY] no snmp-server user user name group name [AGENT] VERSION default snmp-server user user_name group_name [AGENT] VERSION</pre></div><div><div>Parameters</div><ul style="list-style-type: none"><code>user_name</code> name of the user on the host that connects to the agent.<code>group_name</code> name of the group to which the user is associated.<code>AGENT</code> location of the host connecting to the SNMP agent. Configuration options include:<ul style="list-style-type: none"><code><no parameter></code> local SNMP agent.<code>remote addr [udp-port p_num]</code> remote SNMP agent location (IP address, udp port). <code>addr</code> denotes the IP address; <code>p_num</code> denotes the udp port socket. (default port is 162).<code>VERSION</code> SNMP version; options include:<ul style="list-style-type: none"><code>v1</code> SNMPv1.<code>v2c</code> SNMPv2c.<code>v3</code> SNMPv3; enables user-name match authentication.<code>ENGINE</code> engine ID used to localize passwords. Available only if <code>VERSION</code> is <code>v3</code>.<ul style="list-style-type: none"><code><no parameter></code> Passwords localized by SNMP copy specified by <code>agent</code>.<code>localized engineID</code> octet string of engineID.<code>SECURITY</code> Specifies authentication and encryption levels. Available only if <code>VERSION</code> is <code>v3</code>. Encryption is available only when authentication is configured.<ul style="list-style-type: none"><code><no parameter></code> no authentication or encryption.<code>auth a_meth a_pass [priv e_meth e_pass]</code> authentication and encryption parameters.<div><div><div>a-meth</div><div>authentication method: options are md5 (HMAC-MD5-96) and sha (HMAC-SHA-96).</div></div><div><div>a-pass</div><div>authentication string for users receiving packets.</div></div><div><div>e-meth</div><div>encryption method: tions are aes (AES-128) and des (CBC-DES).</div></div><div><div>e-pass</div><div>encryption string for the users sending packets.</div></div></div></div></div></div> <div><div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1999.</div><div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1689; Arista User Manual, v. 4.11.1 (1/11/13), at 1374; Arista User Manual v. 4.10.3</div></div></div>
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		(10/22/12), at 1141; Arista User Manual v. 4.9.3.2 (5/3/12), at 896; Arista User Manual v. 4.8.2 (11/18/11), at 703; Arista User Manual v. 4.7.3 (7/18/11), at 559.
Cisco IOS 15.4 Effective date of registration: 11/26/2014	<p>Usage Guidelines</p> <p>To configure a remote user, specify the IP address or port number for the remote SNMP agent of the device where the user resides. Also, before you configure remote users for a particular agent, configure the SNMP engine ID, using the <code>snmp-server engineID</code> command with the <code>remote</code> keyword. The remote agent's SNMP engine ID is needed when computing the authentication and privacy digests from the password. If the remote engine ID is not configured first, the configuration command will fail.</p> <p>For the <code>privpassword</code> and <code>auth-password</code> arguments, the minimum length is one character; the recommended length is at least eight characters, and should include both letters and numbers.</p> <p>Cisco IOS SNMP Support Command Reference (2013), at 396.</p>	<p>To configure a remote user, specify the IP address or port number of the device where the user's remote SNMP agent resides. A remote agent's engine ID must be configured before remote users for that agent are configured. A user's authentication and privacy digests are derived from the engine ID and the user's password. The configuration command fails if the remote engine ID is not configured first.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) 10/2/2014), at 1999.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1689; Arista User Manual, v. 4.11.1 (1/11/13), at 1374; Arista User Manual v. 4.10.3 (10/22/12), at 1141; Arista User Manual v. 4.9.3.2 (5/3/12), at 896; Arista User Manual v. 4.8.2 (11/18/11), at 703; Arista User Manual v. 4.7.3 (7/18/11), at 559.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>timers basic (ISO CLNS)</div> <p>To configure ISO IGRP timers, use the timers basic command in router configuration mode. To restore the default values, use the no form of this command.</p> <div>timers basic update-interval holddown-interval invalid-interval</div> <div>no timers basic update-interval holddown-interval invalid-interval</div> <table><tr><td>Syntax</td><td>Description</td></tr><tr><td>update-interval</td><td>Time, in seconds, between the sending of routing updates.</td></tr><tr><td>holddown-interval</td><td>Time, in seconds, a system or area router is kept in holddown state, during which routing information regarding better paths is suppressed. (A router enters into a holddown state when an update packet is received that indicates the route is unreachable. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets.) When the holddown interval expires, routes advertised by other sources are accepted and the route is no longer inaccessible.</td></tr><tr><td>invalid-interval</td><td>Time, in seconds, that a route remains in the routing table after it has been determined that it is not reachable. After that length of time, the route is removed from the routing table.</td></tr></table> <p>Cisco IOS Interface and Hardware Component Command Reference (2011), at ISO-178.</p>	Syntax	Description	update-interval	Time, in seconds, between the sending of routing updates.	holddown-interval	Time, in seconds, a system or area router is kept in holddown state, during which routing information regarding better paths is suppressed. (A router enters into a holddown state when an update packet is received that indicates the route is unreachable. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets.) When the holddown interval expires, routes advertised by other sources are accepted and the route is no longer inaccessible.	invalid-interval	Time, in seconds, that a route remains in the routing table after it has been determined that it is not reachable. After that length of time, the route is removed from the routing table.	<div>timers basic (RIP)</div> <p>The timers basic command configures the update interval, the expiration time, and the deletion time for routes received and sent through RIP. The command requires value declaration of all values.</p> <ul style="list-style-type: none">The update time is the interval between unsolicited route responses. The default is 30 seconds.The expiration time is initialized when a route is established and any time an update is received for the route. If the specified period elapses from the last time the route update was received, then the route is marked as inaccessible and advertised as unreachable. However, the route forwards packets until the deletion time expires. The default value is 180 seconds.The deletion time is initialized when the expiration time has elapsed. On initialization of the deletion time, the route is no longer valid; however, it is retained in the routing table for a short time so that neighbors can be notified that the route has been dropped. Upon expiration of the deletion time, the route is removed from the routing table. The default is 120 seconds. <p>The no timers basic and default timers basic commands return the timer values to their default values by removing the timers-basic command from <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-RIP Configuration</td></tr></table> <p>Command Syntax</p> <div>timers basic update time expire_time deletion_time</div> <div>no timers basic</div> <div>default timers basic</div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1671.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1621; Arista User Manual v. 4.12.3 (7/17/13), at 1433; Arista User Manual, v. 4.11.1 (1/11/13), at 1179; Arista User Manual v. 4.10.3 (10/22/12), at 989; Arista User Manual v. 4.9.3.2 (5/3/12), at 748; ; Arista User Manual v. 4.8.2 (11/18/11), at 570.</p>	Platform	all	Command Mode	Router-RIP Configuration
	Syntax	Description												
update-interval	Time, in seconds, between the sending of routing updates.													
holddown-interval	Time, in seconds, a system or area router is kept in holddown state, during which routing information regarding better paths is suppressed. (A router enters into a holddown state when an update packet is received that indicates the route is unreachable. The route is marked inaccessible and advertised as unreachable. However, the route is still used for forwarding packets.) When the holddown interval expires, routes advertised by other sources are accepted and the route is no longer inaccessible.													
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Platform	all													
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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<table><thead><tr><th>Field</th><th>Description</th></tr></thead><tbody><tr><td>Version 34</td><td>Indicates version number of the Level 1 routing table. All Level 1 routes with a version number that does not match this number are flushed from the routing table. The router's version number increments when the configuration changes from Level 1 or Level 1-2 to Level 2 only.</td></tr><tr><td>System Id</td><td>Identification value of the system listed in Level 1 forwarding table.</td></tr><tr><td>Next-Hop</td><td>System ID of best-cost next-hop to listed address.</td></tr><tr><td>SNPA</td><td>SNPA of next-hop system.</td></tr><tr><td>Interface</td><td>Interface through which next-hop system is known.</td></tr><tr><td>Metric</td><td>IS-IS metric for the route.</td></tr><tr><td>State</td><td>Up (active) or Down (nonoperational).</td></tr></tbody></table> <p>Cisco IOS Interface and Hardware Component Command Reference (2011), at ISO-137.</p>	Field	Description	Version 34	Indicates version number of the Level 1 routing table. All Level 1 routes with a version number that does not match this number are flushed from the routing table. The router's version number increments when the configuration changes from Level 1 or Level 1-2 to Level 2 only.	System Id	Identification value of the system listed in Level 1 forwarding table.	Next-Hop	System ID of best-cost next-hop to listed address.	SNPA	SNPA of next-hop system.	Interface	Interface through which next-hop system is known.	Metric	IS-IS metric for the route.	State	Up (active) or Down (nonoperational).	<p>Display Values</p> <ul style="list-style-type: none">• Inst. ID IS-IS Instance name.• System ID Identification value of the system listed in the Level 2 forwarding table• Type Level 2 information.• Interface Interface through which the neighbor is reachable.• SNPA Subnetwork point of attachment (MAC address of the next hop).• State State of the adjacency: Up, Down, or INIT• Hold time Remaining hold time of the adjacency.• Area Address The address of the area. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1702.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1459.</p>
Field	Description																	
Version 34	Indicates version number of the Level 1 routing table. All Level 1 routes with a version number that does not match this number are flushed from the routing table. The router's version number increments when the configuration changes from Level 1 or Level 1-2 to Level 2 only.																	
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>Building the Address Table and Address Table Changes</p> <p>The device dynamically builds the address table by using the MAC source address of the frames received. When the device receives a frame for a MAC destination address not listed in its address table, it floods the frame to all LAN ports of the same VLAN except the port that received the frame. When the destination station replies, the device adds its relevant MAC source address and port ID to the address table. The device then forwards subsequent frames to a single LAN port without flooding all LAN ports.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 10.</p>	<p>14.3 MAC Address Table</p> <p>The switch maintains an MAC address table for switching frames efficiently between ports. The MAC address table contains static and dynamic MAC addresses.</p> <ul style="list-style-type: none">• Static MAC addresses are entered into the table through a CLI command.• Dynamic MAC addresses are entered into the table when the switch receives a frame whose source address is not listed in the MAC address table. The switch builds the table dynamically by referencing the source address of frames it receives. <p>When the switch receives a frame, it associates the MAC address of the transmitting interface with the recipient VLAN. When a VLAN receives a frame for a MAC destination address not listed in the address table, the switch bridges the frame to all of the VLAN's ports except the recipient port. When the destination interface replies, the switch adds its MAC address to the MAC address table. The switch forwards subsequent frames with the destination address to the specified port.</p> <p>A multicast address can be associated with multiple ports.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 624.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 494; Arista User Manual, v. 4.11.1 (1/11/13), at 396-97; Arista User Manual v. 4.10.3 (10/22/12), at 328; Arista User Manual v. 4.9.3.2 (5/3/12), at 306.</p>																


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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>• Community VLAN—A community VLAN is a secondary VLAN that carries upstream traffic from the community ports to the promiscuous port gateways and to other host ports in the same community. You can configure multiple community VLANs in a private VLAN domain. The ports within one community can communicate, but these ports cannot communicate with ports in any other community or isolated VLAN in the private VLAN.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 54.</p>	<p>— Community Community VLAN ports carry traffic from host ports to the primary VLAN ports and to other host ports in the same community VLAN.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 763.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 611; Arista User Manual, v. 4.11.1 (1/11/13), at 467; Arista User Manual v. 4.10.3 (10/22/12), at 387; Arista User Manual v. 4.9.3.2 (5/3/12), at 307.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>• Protocol migration—For backward compatibility with 802.1D devices, 802.1w selectively sends 802.1D configuration BPDUs and TCN BPDUs on a per-port basis.</p> <p>When a port is initialized, the migrate-delay timer is started (specifies the minimum time during which 802.1w BPDUs are sent), and 802.1w BPDUs are sent. While this timer is active, the device processes all BPDUs received on that port and ignores the protocol type.</p> <p>If the device receives an 802.1D BPDU after the port migration-delay timer has expired, it assumes that it is connected to an 802.1D device and starts using only 802.1D BPDUs. However, if the 802.1w device is using 802.1D BPDUs on a port and receives an 802.1w BPDU after the timer has expired, it restarts the timer and starts using 802.1w BPDUs on that port.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 100</p>	<p>The clear spanning-tree detected-protocols command forces MST ports to renegotiate with their neighbors.</p> <p>RSTP provides backward compatibility with 802.1D bridges as follows:</p> <ul style="list-style-type: none"> • RSTP selectively sends 802.1D-configured BPDUs and Topology Change Notification (TCN) BPDUs on a per-port basis. • When a port initializes, the migration delay timer starts and RSTP BPDUs are transmitted. While the migration delay timer is active, the bridge processes all BPDUs received on that port • If the bridge receives an 802.1D BPDU after a port's migration delay timer expires, the bridge assumes it is connected to an 802.1D bridge and starts using only 802.1D BPDUs. • When RSTP uses 802.1D BPDUs on a port and receives an RSTP BPDU after the migration delay expires, RSTP restarts the migration delay timer and resumes using RSTP BPDUs on that port. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 953.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 831; Arista User Manual, v. 4.11.1 (1/11/13), at 649; Arista User Manual v. 4.10.3 (10/22/12), at 563; Arista User Manual v. 4.9.3.2 (5/3/12), at 483; Arista User Manual v. 4.8.2 (11/18/11), at 357; Arista User Manual v. 4.7.3 (7/18/11), at 231.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Loop Guard</p> <p>Loop Guard helps prevent bridging loops that could occur because of a unidirectional link failure on a point-to-point link.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 176.</p>	<ul style="list-style-type: none"> • Loop Guard: Prevents loops resulting from a unidirectional link failure on a point-to-point link. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 963.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 842; Arista User Manual, v. 4.11.1 (1/11/13), at 660; Arista User Manual v. 4.10.3 (10/22/12), at 574; Arista User Manual v. 4.9.3.2 (5/3/12), at 494; Arista User Manual v. 4.8.2 (11/18/11), at 368; Arista User Manual v. 4.7.3 (7/18/11), at 242.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Rapid PVST+ achieves rapid transition to the forwarding state only on edge ports and point-to-point links.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 90.</p>	<p>RSTP only achieves rapid transition to forwarding state on edge ports and point-to-point links.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 964.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 843; Arista User Manual, v. 4.11.1 (1/11/13), at 661; Arista User Manual v. 4.10.3 (10/22/12), at 575; Arista User Manual v. 4.9.3.2 (5/3/12), at 494; Arista User Manual v. 4.8.2 (11/18/11), at 368; Arista User Manual v. 4.7.3 (7/18/11), at 242.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Enabling Loop Guard on a root device has no effect but provides protection when a root device becomes a nonroot device.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 176.</p>	<p>Enabling loop guard on a root switch has no effect until the switch becomes a nonroot switch.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 966.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 844; Arista User Manual, v. 4.11.1 (1/11/13), at 662; Arista User Manual v. 4.10.3 (10/22/12), at 576; Arista User Manual v. 4.9.3.2 (5/3/12), at 496; Arista User Manual v. 4.8.2 (11/18/11), at 370; Arista User Manual v. 4.7.3 (7/18/11), at 244.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<ul style="list-style-type: none"> • Enabling Loop Guard globally works only on point-to-point links. • Enabling Loop Guard per interface works on both shared and point-to-point links. • Root Guard forces a port to always be a designated port; it does not allow a port to become a root port. Loop Guard is effective only if the port is a root port or an alternate port. You cannot enable Loop Guard and Root Guard on a port at the same time. • Loop Guard has no effect on a disabled spanning tree instance or a VLAN. • Spanning tree always chooses the first operational port in the channel to send the BPDUs. If that link becomes unidirectional, Loop Guard blocks the channel, even if other links in the channel are functioning properly. • If you group a set of ports that are already blocked by Loop Guard to form a channel, spanning tree loses all the state information for those ports and the new channel port may obtain the forwarding state with a designated role. • If a channel is blocked by Loop Guard and the channel members go back to an individual link status, spanning tree loses all the state information. The individual physical ports may obtain the forwarding state with the designated role, even if one or more of the links that formed the channel are unidirectional. <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 179.</p>	<p>Loop guard, when enabled globally, applies to all point-to-point ports. Loop guard is configurable on individual ports and applies to all STP instances of an enabled port. Loop-inconsistent ports transition to listening state when loop guard is disabled.</p> <p>Enabling loop guard on a root switch has no effect until the switch becomes a nonroot switch.</p> <p>When using loop guard:</p> <ul style="list-style-type: none"> • Do not enable loop guard on portfast-enabled ports. • Loop guard is not functional on ports not connected to point-to-point links. • Loop guard has no effect on disabled spanning tree instances. <p>Loop guard aspects on port channels include:</p> <ul style="list-style-type: none"> • BPDUs are sent over the channel's first operational port. Loop guard blocks the channel if that link becomes unidirectional even when other channel links function properly. • Creating a new channel destroys state information for its component ports; new channels with loop-guard-enabled ports can enter forwarding state as a DP. • Disassembling a channel destroys its state information; component ports from a blocked channel can enter the forwarding state as DPs, even if the channel contained unidirectional links. • A unidirectional link on any port of a loop-guard-enabled channel blocks the entire channel until the affected port is removed or the link resumes bidirectional operation. <p>Loop guard configuration commands include:</p> <ul style="list-style-type: none"> • <code>spanning-tree loopguard default</code> command enables loop guard as a default on all switch ports. • <code>spanning-tree guard</code> control the loop guard setting on the configuration mode interface. This command overrides the default command for the specified interface. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 966.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 844; Arista User Manual, v. 4.11.1 (1/11/13), at 662; Arista User Manual v. 4.10.3 (10/22/12), at 576; Arista User Manual v. 4.9.3.2 (5/3/12), at 496; Arista User Manual v. 4.8.2 (11/18/11), at 370; Arista User Manual v. 4.7.3 (7/18/11), at 245.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>BPDU Guard</p> <p>Enabling BPDU Guard shuts down that interface if a BPDU is received.</p> <p>You can configure BPDU Guard at the interface level. When configured at the interface level, BPDU Guard shuts the port down as soon as the port receives a BPDU, regardless of the port type configuration.</p> <p>When you configure BPDU Guard globally, it is effective only on operational spanning tree edge ports. In a valid configuration, Layer 2 LAN edge interfaces do not receive BPDUs. A BPDU that is received by an edge</p> <p>Layer 2 LAN interface signals an invalid configuration, such as the connection of an unauthorized device. BPDU Guard, when enabled globally, shuts down all spanning tree edge ports when they receive a BPDU. BPDU Guard provides a secure response to invalid configurations, because you must manually put the Layer 2 LAN interface back in service after an invalid configuration.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 174-75.</p>	<p>20.3.4.3 BPDU Guard</p> <p>PortFast interfaces do not receive BPDUs in a valid configuration. BPDU Guard provides a secure response to invalid configurations by disabling ports when they receive a BPDU. Disabled ports differ from blocked ports in that they are re-enabled only through manual intervention.</p> <ul style="list-style-type: none"> When configured globally, BPDU Guard is enabled on ports in the operational portfast state. When configured on an individual interface, BPDU Guard disables the port when it receives a BPDU, regardless of the port's portfast state. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 968.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 846; Arista User Manual, v. 4.11.1 (1/11/13), at 664-65; Arista User Manual v. 4.10.3 (10/22/12), at 578; Arista User Manual v. 4.9.3.2 (5/3/12), at 498; Arista User Manual v. 4.8.2 (11/18/11), at 372; Arista User Manual v. 4.7.3 (7/18/11), at 246.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>BPDU Filtering</p> <p>You can use BPDU Filtering to prevent the device from sending or even receiving BPDUs on specified ports.</p> <p>When configured globally, BPDU Filtering applies to all operational spanning tree edge ports. You should connect edge ports only to hosts, which typically drop BPDUs. If an operational spanning tree edge port receives a BPDU, it immediately returns to a normal spanning tree port type and moves through the regular transitions. In that case, BPDU Filtering is disabled on this port, and spanning tree resumes sending BPDUs on this port.</p> <p>In addition, you can configure BPDU Filtering by the individual interface. When you explicitly configure BPDU Filtering on a port, that port does not send any BPDUs and drops all BPDUs that it receives. You can effectively override the global BPDU Filtering setting on individual ports by configuring the specific interface. This BPDU Filtering command on the interface applies to the entire interface, whether the interface is trunking or not.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 175.</p>	<p>20.3.4.4 BPDU Filter</p> <p>BPDU filtering prevents the switch from sending or receiving BPDUs on specified ports. BPDU filtering is configurable on Ethernet and port channel interfaces.</p> <p>Ports with BPDU filtering enabled do not send BPDUs and drops inbound BPDUs. Enabling BPDU filtering on a port not connected to a host can result in loops as the port continues forwarding data while ignoring inbound BPDU packets.</p> <p>The <code>spanning-tree bpduguard</code> command controls BPDU filtering on the configuration mode interface. BPDU filtering is disabled by default.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 968.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 846-47; Arista User Manual, v. 4.11.1 (1/11/13), at 665; Arista User Manual v. 4.10.3 (10/22/12), at 579; Arista User Manual v. 4.9.3.2 (5/3/12), at 498; Arista User Manual v. 4.8.2 (11/18/11), at 372; Arista User Manual v. 4.7.3 (7/18/11), at 246.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Bridge Assurance</p> <p>You can use Bridge Assurance to protect against certain problems that can cause bridging loops in the network. Specifically, you use Bridge Assurance to protect against a unidirectional link failure or other software failure and a device that continues to forward data traffic when it is no longer running the spanning tree algorithm.</p> <p> Note Bridge Assurance is supported only by Rapid PVST+ and MST.</p> <p>Bridge Assurance is enabled by default and can only be disabled globally. Also, Bridge Assurance can be enabled only on spanning tree network ports that are point-to-point links. Finally, both ends of the link must have Bridge Assurance enabled. If the device on one side of the link has Bridge Assurance enabled and the device on the other side either does not support Bridge Assurance or does not have this feature enabled, the connecting port is blocked.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 175.</p>	<p>spanning-tree bridge assurance</p> <p>The spanning-tree bridge assurance command enables bridge assurance on all ports with a port type of <i>network</i>. Bridge assurance protects against unidirectional link failure, other software failure, and devices that quit running a spanning tree algorithm.</p> <p>Bridge assurance is available only on spanning tree <i>network</i> ports on point-to-point links. Both ends of the link must have bridge assurance enabled. If the device on one side of the link has bridge assurance enabled and the device on the other side either does not support bridge assurance or does not have it enabled, the bridge assurance enabled port is blocked.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1002.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 880; Arista User Manual, v. 4.11.1 (1/11/13), at 698; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 531; Arista User Manual v. 4.8.2 (11/18/11), at 403; Arista User Manual v. 4.7.3 (7/18/11), at 252.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<ul style="list-style-type: none"> • Root Guard—Root Guard prevents the port from becoming the root in an STP topology. <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 6.</p>	<ul style="list-style-type: none"> • Root guard prevents a port from becoming a root or blocked port. A root guard port that receives a superior BPDU transitions to the root-inconsistent (blocked) state. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1005.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 883; Arista User Manual, v. 4.11.1 (1/11/13), at 701; Arista User Manual v. 4.10.3 (10/22/12), at 615; Arista User Manual v. 4.9.3.2 (5/3/12), at 534; Arista User Manual v. 4.8.2 (11/18/11), at 406; Arista User Manual v. 4.7.3 (7/18/11), at 268.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p> Note Do not disable spanning tree on a VLAN unless all switches and bridges in the VLAN have spanning tree disabled. You cannot disable spanning tree on some switches and bridges in a VLAN and leave it enabled on other switches and bridges in the VLAN. This action can have unexpected results because switches and bridges with spanning tree enabled will have incomplete information regarding the physical topology of the network.</p> <hr/> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Configuration Guide (2011), at 108.</p>	<p>Important When disabling spanning tree on a VLAN, ensure that all switches and bridges in the network disable spanning tree for the same VLAN. Disabling spanning tree on a subset of switches and bridges in a VLAN may have unexpected results because switches and bridges running spanning tree will have incomplete information regarding the network's physical topology.</p> <hr/> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1023.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 901; Arista User Manual, v. 4.11.1 (1/11/13), at 719; Arista User Manual v. 4.10.3 (10/22/12), at 633; Arista User Manual v. 4.9.3.2 (5/3/12), at 550; Arista User Manual v. 4.8.2 (11/18/11), at 422; Arista User Manual v. 4.7.3 (7/18/11), at 264.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>The software elects a router as the IGMP querier on a subnet if it has the lowest IP address. As long as a router continues to receive query messages from a router with a lower IP address, it resets a timer that is based on its querier timeout value. If the querier timer of a router expires, it becomes the designated querier. If that router later receives a host query message from a router with a lower IP address, it drops its role as the designated querier and sets its querier timer again.</p> <hr/> <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 20 .</p>	<p>The router with the lowest IP address on a subnet sends membership queries as the IGMP querier. When a router receives a membership query from a source with a lower IP address, it resets its query response timer. Upon timer expiry, the router begins sending membership queries. If the router subsequently receives a membership query from a router with a lower IP address, it stops sending membership queries and resets the query response timer.</p> <hr/> <p>Arista User Manual v. 4v. 4.14.3F - Rev. 2 (10/2/14), at 1779.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1505; Arista User Manual, v. 4.11.1 (1/11/13), at 1205; Arista User Manual v. 4.10.3 (10/22/12), at 999; Arista User Manual v. 4.9.3.2 (5/3/12), at 757; Arista User Manual v. 4.8.2 (11/18/11), at 579; Arista User Manual v. 4.7.3 (7/18/11), at 459; Arista User Manual v. 4.6.0 (12/22/2010), at 309</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><td>IGMP version</td><td>2</td></tr><tr><td>Startup query interval</td><td>30 seconds</td></tr><tr><td>Startup query count</td><td>2</td></tr><tr><td>Robustness value</td><td>2</td></tr><tr><td>Querier timeout</td><td>255 seconds</td></tr><tr><td>Query timeout</td><td>255 seconds</td></tr><tr><td>Query max response time</td><td>10 seconds</td></tr><tr><td>Query interval</td><td>125 seconds</td></tr><tr><td>Last member query response interval</td><td>1 second</td></tr><tr><td>Last member query count</td><td>2</td></tr><tr><td>Group membership timeout</td><td>260 seconds</td></tr><tr><td>Report link local multicast groups</td><td>Disabled</td></tr><tr><td>Enforce router alert</td><td>Disabled</td></tr><tr><td>Immediate leave</td><td>Disabled</td></tr></table>	IGMP version	2	Startup query interval	30 seconds	Startup query count	2	Robustness value	2	Querier timeout	255 seconds	Query timeout	255 seconds	Query max response time	10 seconds	Query interval	125 seconds	Last member query response interval	1 second	Last member query count	2	Group membership timeout	260 seconds	Report link local multicast groups	Disabled	Enforce router alert	Disabled	Immediate leave	Disabled	<pre>Current IGMP router version: 2 IGMP query interval: 125 seconds IGMP max query response time: 100 deciseconds Last member query response interval: 10 deciseconds Last member query response count: 2 IGMP querier: 172.17.26.1 Robustness: 2 Require router alert: enabled Startup query interval: 312 deciseconds Startup query count: 2 General query timer expiry: 00:00:22 Multicast groups joined: 239.255.255.250</pre>
	IGMP version	2																												
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Anycast-RP</p> <p>Anycast-RP has two implementations: one uses Multicast Source Discovery Protocol (MSDP) and the other is based on <i>RFC 4610, Anycast-RP Using Protocol Independent Multicast (PIM)</i>. This section describes how to configure PIM Anycast-RP.</p> <p>You can use PIM Anycast-RP to assign a group of routers, called the Anycast-RP set, to a single RP address that is configured on multiple routers. The set of routers that you configure as Anycast-RPs is called the Anycast-RP set. This method is the only RP method that supports more than one RP per multicast group, which allows you to load balance across all RPs in the set. The Anycast RP supports all multicast groups.</p> <p>PIM register messages are sent to the closest RP and PIM join-prune messages are sent in the direction of the closest RP as determined by the unicast routing protocols. If one of the RPs goes down, unicast routing ensures these message will be sent in the direction of the next-closest RP.</p> <p>You must configure PIM on the loopback interface that is used for the PIM Anycast RP.</p> <p>For more information about PIM Anycast-RP, see <i>RFC 4610</i>.</p> <p>For information about configuring Anycast-RPs, see <i>Configuring a PIM Anycast-RP Set</i>.</p> <p>PIM Register Messages</p> <p>PIM register messages are unicast to the RP by designated routers (DRs) that are directly connected to multicast sources. The PIM register message has the following functions:</p> <ul style="list-style-type: none"> • To notify the RP that a source is actively sending to a multicast group. • To deliver multicast packets sent by the source to the RP for delivery down the shared tree. <p>The DR continues to send PIM register messages to the RP until it receives a Register-Stop message from the RP. The RP sends a Register-Stop message in either of the following cases:</p> <ul style="list-style-type: none"> • The RP has no receivers for the multicast group being transmitted. • The RP has joined the SPT to the source but has not started receiving traffic from the source. <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 68-69.</p>	<p>Anycast-RP</p> <p>PIM Anycast-RP defines a single RP address that is configured on multiple routers. An anycast-RP set consists of the routers configured with the same anycast-RP address. Anycast-RP provides redundancy protection and load balancing. The anycast-RP set supports all multicast groups.</p> <p>PIM register messages are unicast to the RP by designated routers (DRs) that are directly connected to multicast sources. The switch sends these messages and join-prune messages to the anycast-RP set member specified in the anycast-RP command. In a typical configuration, one command is required for each member of the anycast-RP set.</p> <p>The PIM register message has the following functions:</p> <ul style="list-style-type: none"> • Notify the RP that a source is actively sending to a multicast group. • Deliver multicast packets sent by the source to the RP for delivery down the shared tree. <p>The DR continues sending PIM register messages to the RP until it receives a Register-Stop message from the RP. The RP sends a Register-Stop message in either of the following cases:</p> <ul style="list-style-type: none"> • The RP has no receivers for the multicast group being transmitted. • The RP has joined the SPT to the source but has not started receiving traffic from the source. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1874.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1580; Arista User Manual, v. 4.11.1 (1/11/13), at 1274; Arista User Manual v. 4.10.3 (10/22/12), at 1005-06; Arista User Manual v. 4.9.3.2 (5/3/12), at 763-64; Arista User Manual v. 4.8.2 (11/18/11), at 639; Arista User Manual v. 4.7.3 (7/18/11), at 514.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Note</p> <p>Use the show ip mroute command to display the statistics for multicast route and prefixes.</p> <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 118.</p>	<p>Multicast Display Commands</p> <p>To display the information in the multicast routing table use the show ip mroute command. To display the MFIB table information, use the show ip mfib command.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1758.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1486; Arista User Manual, v. 4.11.1 (1/11/13), at 1188; Arista User Manual v. 4.10.3 (10/22/12), at 1012; Arista User Manual v. 4.9.3.2 (5/3/12), at 770; Arista User Manual v. 4.8.2 (11/18/11), at 589; Arista User Manual v. 4.7.3 (7/18/11), at 469; Arista User Manual v. 4.6.0 (12/22/2010), at 319.</p>



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Cisco IOS 12.4 Effective date of registration: 8/12/2005	<div><div>show ip mroute</div><div>Displays the contents of the IP multicast routing table.</div></div> <p>Cisco IOS IP Multicast Command Reference (July 16, 2005), at 12.</p>	<p>Multicast Display Commands</p> <div><div>To display the information in the multicast routing table</div><div>use the show ip mroute command.</div><div>To display the MFIB table information, use the show ip mfib command.</div></div> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1758</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1486; Arista User Manual, v. 4.11.1 (1/11/13), at 1188; Arista User Manual v. 4.10.3 (10/22/12), at 1012; Arista User Manual v. 4.9.3.2 (5/3/12), at 770; Arista User Manual v. 4.8.2 (11/18/11), at 589; Arista User Manual v. 4.7.3 (7/18/11), at 469; Arista User Manual v. 4.6.0 (12/22/2010), at 319</p>												
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Command or Action</th><th>Purpose</th></tr><tr><td>Step 4</td><td></td></tr><tr><td><table><tr><th>Option</th><th>Description</th></tr><tr><td><div><div>ip igmp snooping</div><div>switch(config-vlan-config)# ip igmp snooping</div></div></td><td><div>Enables IGMP snooping for the current VLAN. The default is enabled.</div></td></tr><tr><td><div><div>ip igmp snooping explicit-tracking</div><div>switch(config-vlan-config)# ip igmp snooping explicit-tracking</div></div></td><td><div>Tracks IGMPv3 membership reports from individual hosts for each port on a per-VLAN basis. The default is enabled on all VLANs.</div></td></tr></table></td><td><div>These commands configure IGMP snooping parameters.</div></td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 139</p>	Command or Action	Purpose	Step 4		<table><tr><th>Option</th><th>Description</th></tr><tr><td><div><div>ip igmp snooping</div><div>switch(config-vlan-config)# ip igmp snooping</div></div></td><td><div>Enables IGMP snooping for the current VLAN. The default is enabled.</div></td></tr><tr><td><div><div>ip igmp snooping explicit-tracking</div><div>switch(config-vlan-config)# ip igmp snooping explicit-tracking</div></div></td><td><div>Tracks IGMPv3 membership reports from individual hosts for each port on a per-VLAN basis. The default is enabled on all VLANs.</div></td></tr></table>	Option	Description	<div><div>ip igmp snooping</div><div>switch(config-vlan-config)# ip igmp snooping</div></div>	<div>Enables IGMP snooping for the current VLAN. The default is enabled.</div>	<div><div>ip igmp snooping explicit-tracking</div><div>switch(config-vlan-config)# ip igmp snooping explicit-tracking</div></div>	<div>Tracks IGMPv3 membership reports from individual hosts for each port on a per-VLAN basis. The default is enabled on all VLANs.</div>	<div>These commands configure IGMP snooping parameters.</div>	<div><div>The ip igmp snooping command controls the global snooping setting.</div><div>The ip igmp snooping vlan command enables snooping on individual VLANs if snooping is globally enabled. IGMP snooping is enabled on all VLANs by default.</div></div> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1780</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1506; Arista User Manual, v. 4.11.1 (1/11/13), at 1206; Arista User Manual v. 4.10.3 (10/22/12), at 998; Arista User Manual v. 4.9.3.2 (5/3/12), at 756; Arista User Manual v. 4.8.2 (11/18/11), at 581; Arista User Manual v. 4.7.3 (7/18/11), at 461.</p>
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><td><div><div>ip igmp snooping mrouter</div><div>interface interface</div><div>switch(config-vlan-config)# ip igmp snooping mrouter</div><div>interface ethernet 2/1</div></div></td><td><div>Configures a static connection to a multicast router. The interface to the router must be in the selected VLAN.</div><div>You can specify the interface by the type and the number, such as ethernet slot/port.</div></td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 140.</p>	<div><div>ip igmp snooping mrouter</div><div>interface interface</div><div>switch(config-vlan-config)# ip igmp snooping mrouter</div><div>interface ethernet 2/1</div></div>	<div>Configures a static connection to a multicast router. The interface to the router must be in the selected VLAN.</div> <div>You can specify the interface by the type and the number, such as ethernet slot/port.</div>	<p>Specifying a Static Multicast Router Connection</p> <div><div>The ip igmp snooping vlan mrouter command statically configures a port that connects to a multicast router to join all multicast groups.</div><div>The port to the router must be in the specified VLAN range.</div></div> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1780</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1506; Arista User Manual, v. 4.11.1 (1/11/13), at 1206; Arista User Manual v. 4.10.3 (10/22/12), at 1003; Arista User Manual v. 4.9.3.2 (5/3/12), at 761; Arista User Manual v. 4.8.2 (11/18/11), at 584; Arista User Manual v. 4.7.3 (7/18/11), at 503; Arista User Manual v. 4.6.0 (12/22/2010), at 349.</p>										
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>Displaying IGMP Snooping Statistics</p> <p>Use the <code>show ip igmp snooping statistics vlan</code> command to display IGMP snooping statistics. You can see the virtual port channel (vPC) statistics in this output.</p> <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 144</p>	<p>show ip igmp statistics</p> <p>The <code>show ip igmp statistics</code> command displays IGMP transmission statistics for the specified interface.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1867.</p>
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>SA Messages and Caching</p> <p>MSDP peers exchange Source-Active (SA) messages to propagate information about active sources. SA messages contain the following information:</p> <ul style="list-style-type: none"> • Source address of the data source • Group address that the data source uses • IP address of the RP or the configured originator ID <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 148-49</p>	<p>35.2.2.1 Source Active Messages</p> <p>A Source Active (SA) message is a message that an RP creates and sends to MSDP peers when it learns of a new multicast source through a PIM register message. RPs that intend to originate or receive SA messages must establish MSDP peering with other RPs, either directly or through intermediate MSDP peers. An RP that is not a DR on a shared network should only originate SAs in response to register messages it receives from the DR. It does not originate SA's for directly connected sources in its domain.</p> <p>SA messages contain the following fields:</p> <ul style="list-style-type: none"> • Source address of the data source. • Group address that receives data sent by the source. • IP address of the RP <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1912.</p> <p>Arista User Manual v. 4.12.3 (7/17/13), at 1618; Arista User Manual, v. 4.11.1 (1/11/13), at 1310.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<div data-bbox="300 277 1142 347"> RFC 5059 <i>Bootstrap Router (BSR) Mechanism for Protocol Independent Multicast (PIM)</i> </div> <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Configuration Guide (2012), at 174.</p>	<p>34.3 Configuring PIM</p> <p>The following sections describe the configuration of static RPs, dynamic RPs, and anycast-RPs. RP implementation is defined through the following RFCs:</p> <ul style="list-style-type: none"> • RFC 5059: Bootstrap Router (BSR) Mechanism for Protocol Independent Multicast (PIM). • RFC 6226: PIM Group-to-Rendezvous-Point Mapping. <p>This section describes the following configuration tasks:</p> <ul style="list-style-type: none"> • Section 34.3.1: Enabling PIM • Section 34.3.2: Rendezvous Points (RPs) • Section 34.3.3: Hello Messages • Section 34.3.4: Designated Router Election • Section 34.3.5: Join-Prune Messages <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1872.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1578; Arista User Manual, v. 4.11.1 (1/11/13), at 1272; Arista User Manual v. 4.10.3 (10/22/12), at 1004; Arista User Manual v. 4.9.3.2 (5/3/12), at 762.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Audience</p> <div data-bbox="466 862 1142 911"> <p>This guide is for experienced network administrators who are responsible for configuring and maintaining the Cisco MDS 9000 Family of multilayer directors and fabric switches.</p> </div> <p>Cisco DCNM Fundamentals Guide, Release 6.x (2011), at lxi.</p>	<p>Audience</p> <div data-bbox="1283 862 2028 911"> <p>This guide is for experienced network administrators who are responsible for configuring and maintaining Arista switches.</p> </div> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 41.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 35; Arista User Manual, v. 4.11.1 (1/11/13), at 29; Arista User Manual v. 4.10.3 (10/22/12), at 27; Arista User Manual v. 4.9.3.2 (5/3/12), at 23; Arista User Manual v. 4.8.2 (11/18/11), at 19; Arista User Manual v. 4.7.3 (7/18/11), at 17; Arista User Manual v. 4.6.0 (12/22/2010), at 13</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p><i>Table 5-1 Channel Modes for Individual Links in a Port Channel</i></p> <table><tr><th>Channel Mode</th><th>Description</th></tr><tr><td>passive</td><td>LACP mode that places a port into a passive negotiating state in which the port responds to LACP packets that it receives but does not initiate LACP negotiation.</td></tr><tr><td>active</td><td>LACP mode that places a port into an active negotiating state in which the port initiates negotiations with other ports by sending LACP packets.</td></tr><tr><td>on</td><td>All static port channels (that are not running LACP) remain in this mode. If you attempt to change the channel mode to active or passive before enabling LACP, the device displays an error message. You enable LACP on each channel by configuring the interface in that channel for the channel mode as either active or passive. When an LACP attempts to negotiate with an interface in the on state, it does not receive any LACP packets and becomes an individual link with that interface; it does not join the LACP channel group. The default port-channel mode is on.</td></tr></table> <p>Interfaces Configuration Guide, Cisco DCNM for LAN, Release 6.x (2012), at 5-10</p>	Channel Mode	Description	passive	LACP mode that places a port into a passive negotiating state in which the port responds to LACP packets that it receives but does not initiate LACP negotiation.	active	LACP mode that places a port into an active negotiating state in which the port initiates negotiations with other ports by sending LACP packets.	on	All static port channels (that are not running LACP) remain in this mode. If you attempt to change the channel mode to active or passive before enabling LACP, the device displays an error message. You enable LACP on each channel by configuring the interface in that channel for the channel mode as either active or passive. When an LACP attempts to negotiate with an interface in the on state, it does not receive any LACP packets and becomes an individual link with that interface; it does not join the LACP channel group. The default port-channel mode is on.	<p>Parameters</p> <ul style="list-style-type: none">• <i>number</i> specifies a channel group ID. Values range from 1 through 1000.• LACP_MODE specifies the interface LACP mode. Values include:<ul style="list-style-type: none">— mode on Configures interface as a static port channel, disabling LACP. The switch does not verify or negotiate port channel membership with other switches.— mode active Enables LACP on the interface in active negotiating state. The port initiates negotiations with other ports by sending LACP packets.— mode passive Enables LACP on the interface in a passive negotiating state. The port responds to LACP packets but cannot start LACP negotiations. <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 469.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 403; Arista User Manual, v. 4.11.1 (1/11/13), at 336; Arista User Manual v. 4.10.3 (10/22/12), at 294; Arista User Manual v. 4.9.3.2 (5/3/12), at 278; Arista User Manual v. 4.8.2 (11/18/11), at 210; Arista User Manual v. 4.7.3 (7/18/11), at 424; Arista User Manual v. 4.6.0 (12/22/2010), at 271</p>
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<h3 data-bbox="317 708 533 732">Loopback Interfaces</h3> <p data-bbox="457 748 1136 821">A loopback interface is a virtual interface with a single endpoint that is always up. Any packet transmitted over a loopback interface is immediately received by this interface. Loopback interfaces emulate a physical interface. You can configure up to 1024 loopback interfaces per VDC, numbered 0 to 1023.</p> <p data-bbox="300 862 1100 927">Interfaces Configuration Guide, Cisco DCNM for LAN, Release 6.x (2012), at 4-4 .</p>	<h4 data-bbox="1182 708 1423 732">14.4.4 Loopback Ports</h4> <p data-bbox="1266 740 2028 821">A loopback interface is a virtual network interface implemented in software and does not connect to any hardware. Traffic sent to the loopback interface is immediately received on the sending interface. The switch provides loopback configuration mode for creating loopback interfaces and modifying their operating parameters.</p> <p data-bbox="1171 862 1835 894">Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 631.</p> <p data-bbox="1171 927 1965 1024"><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 500; Arista User Manual, v. 4.11.1 (1/11/13), at 397; Arista User Manual v. 4.10.3 (10/22/12), at 329.</p>
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Configuring a Maximum Number of MAC Addresses</p> <p>You can configure the maximum number of MAC addresses that can be learned or statically configured on interfaces that belong to a port profile.</p> <p>Interfaces Configuration Guide, Cisco DCNM for LAN, Release 6.x (2012), at 10-22</p>	<p>Port Security Configuration</p> <p>MAC security restricts input to a switched port by limiting the number and identity of MAC addresses that can access the port.</p> <p>MAC address security is enabled by switchport port-security. Ports with MAC security enabled restrict traffic to a limited number of hosts, as determined by their MAC addresses. The maximum number of MAC addresses that can be assigned to an interface is configured by switchport port-security maximum. The default MAC address limit on an interface where port security is enabled is one.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 632.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 624; Arista User Manual v. 4.12.3 (7/17/13), at 501; Arista User Manual, v. 4.11.1 (1/11/13), at 405; Arista User Manual v. 4.10.3 (10/22/12), at 336.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>By default, an interface can have only one secure MAC address. You can configure the maximum number of MAC addresses permitted per interface or per VLAN on an interface. Maximums apply to secure MAC addresses learned by any method: dynamic, sticky, or static.</p> <p>ICisco Nexus 7000 Series NX-OS Security Configuration Guide, Release 6.x (2013), at 507</p>	<p>Port Security Configuration</p> <p>MAC security restricts input to a switched port by limiting the number and identity of MAC addresses that can access the port.</p> <p>MAC address security is enabled by switchport port-security. Ports with MAC security enabled restrict traffic to a limited number of hosts, as determined by their MAC addresses. The maximum number of MAC addresses that can be assigned to an interface is configured by switchport port-security maximum. The default MAC address limit on an interface where port security is enabled is one.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 632.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 624; Arista User Manual v. 4.12.3 (7/17/13), at 501; Arista User Manual, v. 4.11.1 (1/11/13), at 405; Arista User Manual v. 4.10.3 (10/22/12), at 336.</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>By default, an interface can have only one secure MAC address. You can configure the maximum number of MAC addresses permitted per interface or per VLAN on an interface. Maximums apply to secure MAC addresses learned by any method: dynamic, sticky, or static.</p> <p>Cisco Nexus 7000 Series NX-OS Security Configuration Guide, Release 5.x (2010), at 177</p>	<p>Port Security Configuration</p> <p>MAC security restricts input to a switched port by limiting the number and identity of MAC addresses that can access the port.</p> <p>MAC address security is enabled by switchport port-security. Ports with MAC security enabled restrict traffic to a limited number of hosts, as determined by their MAC addresses. The maximum number of MAC addresses that can be assigned to an interface is configured by switchport port-security maximum. The default MAC address limit on an interface where port security is enabled is one.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 632.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 624; Arista User Manual v. 4.12.3 (7/17/13), at 501; Arista User Manual, v. 4.11.1 (1/11/13), at 405; Arista User Manual v. 4.10.3 (10/22/12), at 336.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to return to EXEC mode from global configuration mode:</p> <pre>switch(config)# end switch#</pre> <p>This example shows how to return to EXEC mode from interface configuration mode:</p> <pre>switch(config-if)# end switch#</pre> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2013), at FND-44</p>	<ul style="list-style-type: none"> To return to Privileged EXEC mode from any configuration mode, type end or Ctrl-Z. <pre>switch(config-if-Et24)#<Ctrl-z> switch#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 120.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 99; Arista User Manual, v. 4.11.1 (1/11/13), at 69; Arista User Manual v. 4.10.3 (10/22/12), at 61; Arista User Manual v. 4.9.3.2 (5/3/12), at 57; Arista User Manual v. 4.8.2 (11/18/11), at 52; Arista User Manual v. 4.7.3 (7/18/11), at 47; Arista User Manual v. 4.6.0 (12/22/2010), at 41</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to return to EXEC mode from global configuration mode:</p> <pre>switch(config)# end switch#</pre> <p>This example shows how to return to EXEC mode from interface configuration mode:</p> <pre>switch(config-if)# end switch#</pre> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2010), at FND-37</p>	<ul style="list-style-type: none"> To return to Privileged EXEC mode from any configuration mode, type end or Ctrl-Z. <pre>switch(config-if-Et24)#<Ctrl-z> switch#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 120.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 99; Arista User Manual, v. 4.11.1 (1/11/13), at 69; Arista User Manual v. 4.10.3 (10/22/12), at 61; Arista User Manual v. 4.9.3.2 (5/3/12), at 57; Arista User Manual v. 4.8.2 (11/18/11), at 52; Arista User Manual v. 4.7.3 (7/18/11), at 47; Arista User Manual v. 4.6.0 (12/22/2010), at 41</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p> Note The reload command does not save the running configuration. Use the <u>copy running-config startup-config</u> command to save the current configuration on the device.</p> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2013), at FND-105</p>	<p>Step 8 Type write memory (or <u>copy running-config startup-config</u>) to save the new configuration to the <i>startup-config</i> file. See Section 3.5.4: Saving the Running Configuration Settings.</p> <pre>switch# write memory switch#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 60.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 52; Arista User Manual, v. 4.11.1 (1/11/13), at 44; Arista User Manual v. 4.10.3 (10/22/12), at 38; Arista User Manual v. 4.9.3.2 (5/3/12), at 34; Arista User Manual v. 4.8.2 (11/18/11), at 30; Arista User Manual v. 4.7.3 (7/18/11), at 28; Arista User Manual v. 4.6.0 (12/22/2010), at 25</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p> Note The reload command does not save the running configuration. Use the <u>copy running-config startup-config</u> command to save the current configuration on the device.</p> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2010), at FND-84</p>	<p>Step 8 Type write memory (or <u>copy running-config startup-config</u>) to save the new configuration to the <i>startup-config</i> file. See Section 3.5.4: Saving the Running Configuration Settings.</p> <pre>switch# write memory switch#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 60.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 52; Arista User Manual, v. 4.11.1 (1/11/13), at 44; Arista User Manual v. 4.10.3 (10/22/12), at 38; Arista User Manual v. 4.9.3.2 (5/3/12), at 34; Arista User Manual v. 4.8.2 (11/18/11), at 30; Arista User Manual v. 4.7.3 (7/18/11), at 28; Arista User Manual v. 4.6.0 (12/22/2010), at 25</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display commands related to Open Shortest Path First (OSPF) available in the loopback interface command mode:</p> <pre>switch(config)# interface loopback 0 switch(config-if)# show cli list ospf MODE if-loopback no ip ospf network point-to-point no ip ospf network</pre> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2013), at FND-126</p>	<p>Command Syntax</p> <pre>ip ospf network point-to-point no ip ospf network default ip ospf network</pre> <p>Examples</p> <ul style="list-style-type: none"> These commands configure Ethernet interface 10 as a point-to-point link. <pre>switch(config)#interface ethernet 10 switch(config-if-Et10)#ip ospf network point-to-point switch(config-if-Et10)#</pre> <ul style="list-style-type: none"> This command restores Ethernet interface 10 as a broadcast link. <pre>switch(config-if-Et10)#no ip ospf network switch(config-if-Et10)#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1432.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1219; Arista User Manual, v. 4.11.1 (1/11/13), at 976; Arista User Manual v. 4.10.3 (10/22/12), at 806; Arista User Manual v. 4.9.3.2 (5/3/12), at 692; Arista User Manual v. 4.8.2 (11/18/11), at 465; Arista User Manual v. 4.7.3 (7/18/11), at 338.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display commands related to Open Shortest Path First (OSPF) available in the loopback interface command mode:</p> <pre>switch(config)# interface loopback 0 switch(config-if)# show cli list ospf MODE if-loopback no ip ospf network point-to-point no ip ospf network</pre> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2010), at FND-105</p>	<p>Command Syntax</p> <pre>ip ospf network point-to-point no ip ospf network default ip ospf network</pre> <p>Examples</p> <ul style="list-style-type: none"> These commands configure Ethernet interface 10 as a point-to-point link. <pre>switch(config)#interface ethernet 10 switch(config-if-Et10)#ip ospf network point-to-point switch(config-if-Et10)#</pre> <ul style="list-style-type: none"> This command restores Ethernet interface 10 as a broadcast link. <pre>switch(config-if-Et10)#no ip ospf network switch(config-if-Et10)#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1432.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1219; Arista User Manual, v. 4.11.1 (1/11/13), at 976; Arista User Manual v. 4.10.3 (10/22/12), at 806; Arista User Manual v. 4.9.3.2 (5/3/12), at 692; Arista User Manual v. 4.8.2 (11/18/11), at 465; Arista User Manual v. 4.7.3 (7/18/11), at 338.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>show startup-config</p> <p>To display the startup configuration use the show startup-config command.</p> <p>show startup-config [exclude component-list]</p> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2013), at FND-154.</p>	<p>Example</p> <ul style="list-style-type: none"> Type show startup-config to display the startup configuration file. The response in the example is truncated to display only the ip route configured in Admin Username (page 58). <pre> switch#show startup-config ! Command: show startup-config ! Startup-config last modified at Wed Feb 19 08:34:31 2014 by admin ! <-----OUTPUT OMITTED FROM EXAMPLE-----> ! ip route 0.0.0.0/0 192.0.2.1 ! <-----OUTPUT OMITTED FROM EXAMPLE-----> end switch# </pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 123.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 102; Arista User Manual, v. 4.11.1 (1/11/13), at 72; Arista User Manual v. 4.10.3 (10/22/12), at 65; Arista User Manual v. 4.9.3.2 (5/3/12), at 59; Arista User Manual v. 4.8.2 (11/18/11), at 54; Arista User Manual v. 4.7.3 (7/18/11), at 49.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>show startup-config</p> <p>To display the startup configuration use the show startup-config command.</p> <p>show startup-config [exclude component-list]</p> <p>Cisco Nexus 7000 Series NX-OS Fundamentals Command Reference (2010), at FND-125.</p>	<p>Example</p> <ul style="list-style-type: none"> Type show startup-config to display the startup configuration file. The response in the example is truncated to display only the ip route configured in Admin Username (page 58). <pre> switch#show startup-config ! Command: show startup-config ! Startup-config last modified at Wed Feb 19 08:34:31 2014 by admin ! <-----OUTPUT OMITTED FROM EXAMPLE-----> ! ip route 0.0.0.0/0 192.0.2.1 ! <-----OUTPUT OMITTED FROM EXAMPLE-----> end switch# </pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 123.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 102; Arista User Manual, v. 4.11.1 (1/11/13), at 72; Arista User Manual v. 4.10.3 (10/22/12), at 65; Arista User Manual v. 4.9.3.2 (5/3/12), at 59; Arista User Manual v. 4.8.2 (11/18/11), at 54; Arista User Manual v. 4.7.3 (7/18/11), at 49.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Enabling the Error-Disable Detection</p> <p>You can enable error-disable detection in an application. As a result, when a cause is detected on an interface, the interface is placed in an error-disabled state, which is an operational state that is similar to the link-down state.</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 6.x (2013), at 2-24.</p>	<p>14.5.2 Errdisabled Ports</p> <p>The switch places an Ethernet or management interface in error-disabled state when it detects an error on the interface. Error-disabled is an operational state that is similar to link-down state. Conditions that error-disables an interface includes:</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 123.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 503.</p>
<p>Cisco NX-OS 5.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Enabling the Error-Disable Detection</p> <p>You can enable error-disable detection in an application. As a result, when a cause is detected on an interface, the interface is placed in an error-disabled state, which is an operational state that is similar to the link-down state.</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 5.x (2011), at 2-22.</p>	<p>14.5.2 Errdisabled Ports</p> <p>The switch places an Ethernet or management interface in error-disabled state when it detects an error on the interface. Error-disabled is an operational state that is similar to link-down state. Conditions that error-disables an interface includes:</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 123.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 503.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to configure a Layer 2 trunk interface, assign the native VLAN and the allowed VLANs, and configure the device to tag the native VLAN traffic on the trunk interface:</p> <pre>switch# configure terminal switch(config)# interface ethernet 2/35 switch(config-if)# switchport switch(config-if)# switchport mode trunk switch(config-if)# switchport trunk native vlan 10 switch(config-if)# switchport trunk allowed vlan 5, 10 switch(config-if)# exit switch(config)# vlan dot1q tag native switch(config)#</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 6.x (2013), at 3-36.</p>	<p>The trunk group command is not additive to the allowed vlan command</p> <pre>interface ethernet 1 switchport mode trunk switchport trunk allowed vlan 10 switchport trunk group trunk30</pre> <p>Vlan 30 will not be permitted on the interface as it is not listed in the allowed vlan list.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 767.</p>
<p>Cisco NX-OS 5.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to configure a Layer 2 trunk interface, assign the native VLAN and the allowed VLANs, and configure the device to tag the native VLAN traffic on the trunk interface:</p> <pre>switch# configure terminal switch(config)# interface ethernet 2/35 switch(config-if)# switchport switch(config-if)# switchport mode trunk switch(config-if)# switchport trunk native vlan 10 switch(config-if)# switchport trunk allowed vlan 5, 10 switch(config-if)# exit switch(config)# vlan dot1q tag native switch(config)#</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 5.x (2011), at 3-23-24.</p>	<p>The trunk group command is not additive to the allowed vlan command</p> <pre>interface ethernet 1 switchport mode trunk switchport trunk allowed vlan 10 switchport trunk group trunk30</pre> <p>Vlan 30 will not be permitted on the interface as it is not listed in the allowed vlan list.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 767.</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to configure a Layer 2 trunk interface, assign the native VLAN and the allowed VLANs, and configure the device to tag the native VLAN traffic on the trunk interface:</p> <pre>switch# configure terminal switch(config)# interface ethernet 2/35 switch(config-if)# switchport switch(config-if)# switchport mode trunk switch(config-if)# switchport trunk native vlan 10 switch(config-if)# switchport trunk allowed vlan 5, 10 switch(config-if)# exit switch(config)# vlan dot1q tag native switch(config)#</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 5.x (2010), at 3-19.</p>	<p>The trunk group command is not additive to the allowed vlan command</p> <pre>interface ethernet 1 switchport mode trunk switchport trunk allowed vlan 10 switchport trunk group trunk30</pre> <p>Vlan 30 will not be permitted on the interface as it is not listed in the allowed vlan list.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 767.</p>

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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<p>This example shows how to configure a Layer 2 trunk interface, assign the native VLAN and the allowed VLANs, and configure the device to tag the native VLAN traffic on the trunk interface:</p> <pre>switch# configure terminal switch(config)# interface ethernet 2/35 switch(config-if)# switchport switch(config-if)# switchport mode trunk switch(config-if)# switchport trunk native vlan 10 switch(config-if)# switchport trunk allowed vlan 5, 10 switch(config-if)# exit switch(config)# vlan dot1q tag native switch(config)#</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 5.x (2008), at 3-17.</p>	<p>The trunk group command is not additive to the allowed vlan command</p> <pre>interface ethernet 1 switchport mode trunk switchport trunk allowed vlan 10 switchport trunk group trunk30</pre> <p>Vlan 30 will not be permitted on the interface as it is not listed in the allowed vlan list.</p> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 767.</p>				
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><td>end</td><td>Exits address family configuration mode and returns to global configuration mode.</td></tr><tr><td>Example: switch(config-router-af)# end</td><td></td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 6.x (2013), at 5-30.</p>	end	Exits address family configuration mode and returns to global configuration mode.	Example: switch(config-router-af)# end		<ul style="list-style-type: none">This command exits server-failure configuration mode and returns to global configuration mode. <pre>switch(config-server-failure)#exit switch(config)#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 640.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 508.</p>
end	Exits address family configuration mode and returns to global configuration mode.					
Example: switch(config-router-af)# end						
Cisco IOS 15.0 Effective date of registration: 11/28/2014	<table><tr><td>end</td><td>Exits address family configuration mode and returns to global configuration mode.</td></tr><tr><td>Example: switch(config-router-af)# end</td><td></td></tr></table> <p>Cisco IOS IP Multicast Configuration Guide (2009), at 289.</p>	end	Exits address family configuration mode and returns to global configuration mode.	Example: switch(config-router-af)# end		<ul style="list-style-type: none">This command exits server-failure configuration mode and returns to global configuration mode. <pre>switch(config-server-failure)#exit switch(config)#</pre> <p>Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 640.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 508.</p>
end	Exits address family configuration mode and returns to global configuration mode.					
Example: switch(config-router-af)# end						

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Configuring the LACP Fast Timer Rate</p> <p>You can change the LACP timer rate to modify the duration of the LACP timeout. Use the lacp rate command to set the rate at which LACP control packets are sent to an LACP-supported interface. You can change the timeout rate from the default rate (30 seconds) to the fast rate (1 second). This command is supported only on LACP-enabled interfaces.</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 6.x (2013), at 6-38,</p>	<p>lacp rate</p> <p>The lacp rate command configures the LACP transmission interval on the configuration mode interface. The LACP timeout sets the rate at which LACP control packets are sent to an LACP-supported interface.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 478.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 395; Arista User Manual, v. 4.11.1 (1/11/13), at 340; Arista User Manual v. 4.10.3 (10/22/12), at 298; Arista User Manual v. 4.9.3.2 (5/3/12), at 275; Arista User Manual v. 4.8.2 (11/18/11), at 213.</p>
<p>Cisco NX-OS 5.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Configuring the LACP Fast Timer Rate</p> <p>You can change the LACP timer rate to modify the duration of the LACP timeout. Use the lacp rate command to set the rate at which LACP control packets are sent to an LACP-supported interface. You can change the timeout rate from the default rate (30 seconds) to the fast rate (1 second). This command is supported only on LACP-enabled interfaces.</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 5.x (June 14, 2011), at 6-333.</p>	<p>lacp rate</p> <p>The lacp rate command configures the LACP transmission interval on the configuration mode interface. The LACP timeout sets the rate at which LACP control packets are sent to an LACP-supported interface.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (October 2, 2014), at 478.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 395; Arista User Manual, v. 4.11.1 (1/11/13), at 340; Arista User Manual v. 4.10.3 (10/22/12), at 298; Arista User Manual v. 4.9.3.2 (5/3/12), at 275; Arista User Manual v. 4.8.2 (11/18/11), at 213.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <tr> <td data-bbox="302 280 369 302">Step 3</td><td data-bbox="369 280 642 383"> lacp rate fast Example: switch(config-if)# lacp rate fast </td><td data-bbox="642 280 1140 383"> Configures the fast rate (one second) at which LACP control packets are sent to an LACP-supported interface. To reset the timeout rate to its default, use the no form of the command. </td></tr> </table> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 6.x (2013), at 6-38.</p>	Step 3	lacp rate fast Example: switch(config-if)# lacp rate fast	Configures the fast rate (one second) at which LACP control packets are sent to an LACP-supported interface. To reset the timeout rate to its default, use the no form of the command.	<p>lacp rate</p> <p>The lacp rate command configures the LACP transmission interval on the configuration mode interface. The LACP timeout sets the rate at which LACP control packets are sent to an LACP-supported interface. Supported values include:</p> <ul style="list-style-type: none"> • <i>normal</i>: 30 seconds with synchronized interfaces; one second while interfaces are synchronizing. • <i>fast</i>: one second. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 478.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 395; Arista User Manual, v. 4.11.1 (1/11/13), at 340; Arista User Manual v. 4.10.3 (10/22/12), at 298; Arista User Manual v. 4.9.3.2 (5/3/12), at 275; Arista User Manual v. 4.8.2 (11/18/11), at 213.</p>
Step 3	lacp rate fast Example: switch(config-if)# lacp rate fast	Configures the fast rate (one second) at which LACP control packets are sent to an LACP-supported interface. To reset the timeout rate to its default, use the no form of the command.			
<p>Cisco NX-OS 5.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <tr> <td data-bbox="302 743 369 764">Step 3</td><td data-bbox="369 743 642 846"> lacp rate fast Example: switch(config-if)# lacp rate fast </td><td data-bbox="642 743 1140 846"> Configures the fast rate (one second) at which LACP control packets are sent to an LACP-supported interface. To reset the timeout rate to its default, use the no form of the command. </td></tr> </table> <p>Cisco Nexus 7000 Series NX-OS Interfaces Configuration Guide, Release 5.x (June 14, 2011), at 6-34.</p>	Step 3	lacp rate fast Example: switch(config-if)# lacp rate fast	Configures the fast rate (one second) at which LACP control packets are sent to an LACP-supported interface. To reset the timeout rate to its default, use the no form of the command.	<p>lacp rate</p> <p>The lacp rate command configures the LACP transmission interval on the configuration mode interface. The LACP timeout sets the rate at which LACP control packets are sent to an LACP-supported interface. Supported values include:</p> <ul style="list-style-type: none"> • <i>normal</i>: 30 seconds with synchronized interfaces; one second while interfaces are synchronizing. • <i>fast</i>: one second. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 478.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 395; Arista User Manual, v. 4.11.1 (1/11/13), at 340; Arista User Manual v. 4.10.3 (10/22/12), at 298; Arista User Manual v. 4.9.3.2 (5/3/12), at 275; Arista User Manual v. 4.8.2 (11/18/11), at 213.</p>
Step 3	lacp rate fast Example: switch(config-if)# lacp rate fast	Configures the fast rate (one second) at which LACP control packets are sent to an LACP-supported interface. To reset the timeout rate to its default, use the no form of the command.			

Copyright Registration Information	Cisco	Arista				
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><td>Syntax Description</td><td><div>ipv4 (Optional) Configures BFD session parameters for the IPv4 address.</div><div>ipv6 (Optional) Configures BFD session parameters for the IPv6 address.</div><div>mintx Rate at which BFD control packets are sent to BFD neighbors. The configurable range is from 50 to 999.</div><div>min_rx msec Specifies the rate at which BFD control packets are expected to be received from BFD neighbors. The range is from 50 to 999.</div><div>multiplier value Specifies the number of consecutive BFD control packets that must be missed from a BFD neighbor before BFD declares that the neighbor is unavailable and the BFD neighbor is informed of the failure. The range is from 1 to 50.</div></td></tr><tr><td>Defaults</td><td><div>BFD interval: 50 milliseconds</div><div>min_rx: 50 milliseconds</div><div>multiplier: 3</div></td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 6.x (2013), at 1-12.</p>	Syntax Description	<div>ipv4 (Optional) Configures BFD session parameters for the IPv4 address.</div> <div>ipv6 (Optional) Configures BFD session parameters for the IPv6 address.</div> <div>mintx Rate at which BFD control packets are sent to BFD neighbors. The configurable range is from 50 to 999.</div> <div>min_rx msec Specifies the rate at which BFD control packets are expected to be received from BFD neighbors. The range is from 50 to 999.</div> <div>multiplier value Specifies the number of consecutive BFD control packets that must be missed from a BFD neighbor before BFD declares that the neighbor is unavailable and the BFD neighbor is informed of the failure. The range is from 1 to 50.</div>	Defaults	<div>BFD interval: 50 milliseconds</div> <div>min_rx: 50 milliseconds</div> <div>multiplier: 3</div>	<p>31.3.1 Configuring BFD on an Interface</p> <p>The transmission rate for BFD control packets, the minimum rate at which control packets are expected from the peer, and the multiplier (the number of packets that must be missed in succession before BFD declares the session to be down) are all configured per interface. These values apply to all BFD sessions that pass through the interface.</p> <p>The default values for these parameters are:</p> <ul style="list-style-type: none">transmission rate 300 millisecondsminimum receive rate 300 millisecondsmultiplier 3 <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1737.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1467.</p>
Syntax Description	<div>ipv4 (Optional) Configures BFD session parameters for the IPv4 address.</div> <div>ipv6 (Optional) Configures BFD session parameters for the IPv6 address.</div> <div>mintx Rate at which BFD control packets are sent to BFD neighbors. The configurable range is from 50 to 999.</div> <div>min_rx msec Specifies the rate at which BFD control packets are expected to be received from BFD neighbors. The range is from 50 to 999.</div> <div>multiplier value Specifies the number of consecutive BFD control packets that must be missed from a BFD neighbor before BFD declares that the neighbor is unavailable and the BFD neighbor is informed of the failure. The range is from 1 to 50.</div>					
Defaults	<div>BFD interval: 50 milliseconds</div> <div>min_rx: 50 milliseconds</div> <div>multiplier: 3</div>					
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>ip pim bfd-instance</p> <p>To enable Bidirectional Forwarding Detection (BFD) for Protocol Independent Multicast (PIM) on an interface, use the ip pim bfd-instance command. To return to the default setting, use the no form of this command.</p> <pre>ip pim bfd-instance [disable] no ip pim bfd-instance [disable]</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 6.x (2013), at 1-251.</p>	<p>31.3.2 Configuring BFD for PIM</p> <p>To enable or disable bidirectional forwarding detection (BFD) globally for all protocol independent multicast (PIM) neighbors, use the ip pim bfd command.</p> <p>To enable or disable PIM BFD on a specific interface, use the ip pim bfd-instance command. The interface-level configuration supercedes the global setting.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 766.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1467.</p>				
Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<p>ip pim bfd-instance</p> <p>To enable Bidirectional Forwarding Detection (BFD) for Protocol Independent Multicast (PIM) on an interface, use the ip pim bfd-instance command. To return to the default setting, use the no form of this command.</p> <pre>ip pim bfd-instance [disable] no ip pim bfd-instance [disable]</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 5.x (2010), at 66.</p>	<p>31.3.2 Configuring BFD for PIM</p> <p>To enable or disable bidirectional forwarding detection (BFD) globally for all protocol independent multicast (PIM) neighbors, use the ip pim bfd command.</p> <p>To enable or disable PIM BFD on a specific interface, use the ip pim bfd-instance command. The interface-level configuration supercedes the global setting.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 766.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1467.</p>				

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>switchport trunk native vlan</p> <p>To change the native VLAN ID when the interface is in trunking mode, use the switchport trunk native vlan command. To return the native VLAN ID to VLAN 1, use the no form of this command.</p> <p>switchport trunk native vlan <i>vlan-id</i></p> <p>no switchport trunk native vlan</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 6.x (2013), at 1-253.</p>	<p>To specify the port's native VLAN, use the switchport trunk native vlan command.</p> <p>Example</p> <ul style="list-style-type: none"> These commands configure VLAN 12 as the native VLAN trunk for Ethernet interface 10. <pre>switch(config)#interface ethernet 10 switch(config-if-Et10)#switchport trunk native vlan 12 switch(config-if-Et10)#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 766.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 614; Arista User Manual, v. 4.11.1 (1/11/13), at 470; Arista User Manual v. 4.10.3 (10/22/12), at 390; Arista User Manual v. 4.9.3.2 (5/3/12), at 310.</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>switchport trunk native vlan</p> <p>i. switchport trunk native vlan command;</p> <p>To change the native VLAN ID when the interface is in trunking mode, use the switchport trunk native vlan command. To return the native VLAN ID to VLAN 1, use the no form of this command.</p> <p>switchport trunk native vlan <i>vlan-id</i></p> <p>no switchport trunk native vlan</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 5.x (2010), at 222.</p>	<p>To specify the port's native VLAN, use the switchport trunk native vlan command.</p> <p>Example</p> <ul style="list-style-type: none"> These commands configure VLAN 12 as the native VLAN trunk for Ethernet interface 10. <pre>switch(config)#interface ethernet 10 switch(config-if-Et10)#switchport trunk native vlan 12 switch(config-if-Et10)#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 766.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 614; Arista User Manual, v. 4.11.1 (1/11/13), at 470; Arista User Manual v. 4.10.3 (10/22/12), at 390; Arista User Manual v. 4.9.3.2 (5/3/12), at 310.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>switchport trunk native vlan</p> <p>To change the native VLAN ID when the interface is in trunking mode, use the switchport trunk native vlan command. To return the native VLAN ID to VLAN 1, use the no form of this command.</p> <pre>switchport trunk native vlan <i>vlan-id</i> no switchport trunk native vlan</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 4.0 (2008), at IF-35.</p>	<p>To specify the port's native VLAN, use the switchport trunk native vlan command.</p> <p>Example</p> <ul style="list-style-type: none"> These commands configure VLAN 12 as the native VLAN trunk for Ethernet interface 10. <pre>switch(config)#interface ethernet 10 switch(config-if-Et10)#switchport trunk native vlan 12 switch(config-if-Et10)#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 766.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 614; Arista User Manual, v. 4.11.1 (1/11/13), at 470; Arista User Manual v. 4.10.3 (10/22/12), at 390; Arista User Manual v. 4.9.3.2 (5/3/12), at 310.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to clear all the dynamic Layer 2 entries from the MAC address table for VLAN 20 on port 2/20:</p> <pre>switch(config)#clear mac address-table dynamic vlan 20 interface ethernet 2/20 switch(config)#</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, (2013), at 3.</p>	<p>Example</p> <ul style="list-style-type: none"> This command clears all dynamic mac address table entries for port channel 5 on VLAN 34. <pre>switch#clear mac address-table dynamic vlan 34 interface port-channel 5 switch#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 648.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 516; Arista User Manual, v. 4.11.1 (1/11/13), at 402; Arista User Manual v. 4.10.3 (10/22/12), at 333; Arista User Manual v. 4.9.3.2 (5/3/12), at 316.</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to clear all the dynamic Layer 2 entries from the MAC address table for VLAN 20 on port 2/20:</p> <pre>switch(config)#clear mac address-table dynamic vlan 20 interface ethernet 2/20 switch(config)#</pre> <p>Cisco NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-2-L2-3.</p>	<p>Example</p> <ul style="list-style-type: none"> This command clears all dynamic mac address table entries for port channel 5 on VLAN 34. <pre>switch#clear mac address-table dynamic vlan 34 interface port-channel 5 switch#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 648.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 516; Arista User Manual, v. 4.11.1 (1/11/13), at 402; Arista User Manual v. 4.10.3 (10/22/12), at 333; Arista User Manual v. 4.9.3.2 (5/3/12), at 316.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to clear all the dynamic Layer 2 entries from the MAC address table for VLAN 20 on port 2/20:</p> <pre>switch(config)# clear mac address-table dynamic vlan 20 interface ethernet 2/20 switch(config)#</pre> <p>Cisco NX-OS Layer 2 Switching Command Reference, Release 4.0 (2008), at L2-2-L2-3.</p>	<p>Example</p> <ul style="list-style-type: none"> This command clears all dynamic mac address table entries for port channel 5 on VLAN 34. <pre>switch# clear mac address-table dynamic vlan 34 interface port-channel 5 switch#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 648.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 516; Arista User Manual, v. 4.11.1 (1/11/13), at 402; Arista User Manual v. 4.10.3 (10/22/12), at 333; Arista User Manual v. 4.9.3.2 (5/3/12), at 316.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Usage Guidelines Rapid per VLAN Spanning Tree Plus (Rapid PVST+) and Multiple Spanning Tree (MST) have built-in compatibility mechanisms that allow them to interact properly with other versions of IEEE spanning tree or other regions. For example, a bridge running Rapid PVST+ can send 802.1D bridge protocol data units (BPDUs) on one of its ports when it is connected to a legacy bridge. An MST bridge can detect that a port is at the boundary of a region when it receives a legacy BPDU or an MST BPDU that is associated with a different region.</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 6.x (2013), at 5.</p>	<p>20.2.1.4 Version Interoperability</p> <p>A network can contain switches running different spanning tree versions. The common spanning tree (CST) is a single forwarding path the switch calculates for STP, RSTP, MSTP, and Rapid-PVST topologies in networks containing multiple spanning tree variations.</p> <p>In multi-instance topologies, the following instances correspond to the CST</p> <ul style="list-style-type: none"> Rapid-PVST VLAN 1 MST IST (instance 0) <p>RSTP and MSTP are compatible with other spanning tree versions:</p> <ul style="list-style-type: none"> An RSTP bridge sends 802.1D (original STP) BPDUs on ports connected to an STP bridge. RSTP bridges operating in 802.1D mode remain in 802.1D mode even after all STP bridges are removed from their links. An MST bridge can detect that a port is at a region boundary when it receives an STP BPDU or an MST BPDU from a different region. MST ports assume they are boundary ports when the bridges to which they connect join the same region. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 953.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 831; Arista User Manual, v. 4.11.1 (1/11/13), at 649; Arista User Manual v. 4.10.3 (10/22/12), at 563; Arista User Manual v. 4.9.3.2 (5/3/12), at 483; Arista User Manual v. 4.8.2 (11/18/11), at 357; Arista User Manual v. 4.7.3 (7/18/11), at 231.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p><u>Usage Guidelines</u> Rapid per VLAN Spanning Tree Plus (Rapid PVST+) and Multiple Spanning Tree (MST) have built-in compatibility mechanisms that allow them to interact properly with other versions of IEEE spanning tree or other regions. For example, a bridge running Rapid PVST+ can send 802.1D bridge protocol data units (BPDUs) on one of its ports when it is connected to a legacy bridge. An MST bridge can detect that a port is at the boundary of a region when it receives a legacy BPDU or an MST BPDU that is associated with a different region.</p> <p>Cisco NX-OS Layer 2 Switching Command Reference, Release 5.0 (2010), at L2-5.</p>	<p>20.2.1.4 Version Interoperability</p> <p>A network can contain switches running different spanning tree versions. The common spanning tree (CST) is a single forwarding path the switch calculates for STP, RSTP, MSTP, and Rapid-PVST topologies in networks containing multiple spanning tree variations.</p> <p>In multi-instance topologies, the following instances correspond to the CST</p> <ul style="list-style-type: none"> • Rapid-PVST VLAN 1 • MST IST (instance 0) <p>RSTP and MSTP are compatible with other spanning tree versions:</p> <ul style="list-style-type: none"> • An RSTP bridge sends 802.1D (original STP) BPDUs on ports connected to an STP bridge. • RSTP bridges operating in 802.1D mode remain in 802.1D mode even after all STP bridges are removed from their links. • An MST bridge can detect that a port is at a region boundary when it receives an STP BPDU or an MST BPDU from a different region. • MST ports assume they are boundary ports when the bridges to which they connect join the same region. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 953.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 831; Arista User Manual, v. 4.11.1 (1/11/13), at 649; Arista User Manual v. 4.10.3 (10/22/12), at 563; Arista User Manual v. 4.9.3.2 (5/3/12), at 483; Arista User Manual v. 4.8.2 (11/18/11), at 357; Arista User Manual v. 4.7.3 (7/18/11), at 231.</p>

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<div>Cisco NX-OS 4.0</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>Usage Guidelines</div><div><p>Rapid per VLAN Spanning Tree Plus (Rapid PVST+) and Multiple Spanning Tree (MST) have built-in compatibility mechanisms that allow them to interact properly with other versions of IEEE spanning tree or other regions. For example, a bridge running Rapid PVST+ can send 802.1D bridge protocol data units (BPDUs) on one of its ports when it is connected to a legacy bridge. An MST bridge can detect that a port is at the boundary of a region when it receives a legacy BPDU or an MST BPDU that is associated with a different region.</p></div></div> <div>Cisco NX-OS Layer 2 Switching Command Reference, Release 4.0 (2008), at L2-5.</div>	<div><div>20.2.1.4 Version Interoperability</div><div><p>A network can contain switches running different spanning tree versions. The common spanning tree (CST) is a single forwarding path the switch calculates for STP, RSTP, MSTP, and Rapid-PVST topologies in networks containing multiple spanning tree variations.</p><p>In multi-instance topologies, the following instances correspond to the CST</p><ul style="list-style-type: none">• Rapid-PVST: VLAN 1• MST IST (instance 0)<p>RSTP and MSTP are compatible with other spanning tree versions:</p><ul style="list-style-type: none">• An RSTP bridge sends 802.1D (original STP) BPDUs on ports connected to an STP bridge.• RSTP bridges operating in 802.1D mode remain in 802.1D mode even after all STP bridges are removed from their links.• An MST bridge can detect that a port is at a region boundary when it receives an STP BPDU or an MST BPDU from a different region.• MST ports assume they are boundary ports when the bridges to which they connect join the same region.</div></div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 953.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 831; Arista User Manual, v. 4.11.1 (1/11/13), at 649; Arista User Manual v. 4.10.3 (10/22/12), at 563; Arista User Manual v. 4.9.3.2 (5/3/12), at 483; Arista User Manual v. 4.8.2 (11/18/11), at 357; Arista User Manual v. 4.7.3 (7/18/11), at 231.</div>				
<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>Examples</div><div><p>This example shows how to add a static entry to the MAC address table:</p><pre>switch(config)# mac address-table static 0050.3e8d.6400 vlan 3 interface ethernet 2/1 switch(config)#</pre></div></div> <div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>show mac address-table</td><td>Displays information about the MAC address table.</td></tr></table></div> <div>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 20.</div>	Command	Description	show mac address-table	Displays information about the MAC address table.	<div>The mac address-table static command adds a static entry to the MAC address table.</div> <div><div>Example</div><ul style="list-style-type: none">• This command adds a static entry for unicast MAC address 0012.3694.03ec to the MAC address table.<pre>switch(config)#mac address-table static 0012.3694.03ec vlan 3 interface Ethernet 7 switch(config)#show mac address-table static</pre></div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 624.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 494; Arista User Manual, v. 4.11.1 (1/11/13), at 427-28; Arista User Manual, v. 4.11.1 (1/11/13), at; Arista User Manual v. 4.10.3 (10/22/12), at 331; Arista User Manual v. 4.9.3.2 (5/3/12), at 321-22.</div>
Command	Description					
show mac address-table	Displays information about the MAC address table.					

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<div><div>Examples</div><div>This example shows how to add a static entry to the MAC address table: <pre>switch(config)# mac address-table static 0050.3e8d.6400 vlan 3 interface ethernet 2/1 switch(config)#</pre></div></div> <div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>show mac address-table</td><td>Displays information about the MAC address table.</td></tr></table></div> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-18.</p>	Command	Description	show mac address-table	Displays information about the MAC address table.	<div>The <code>mac address-table static</code> command adds a static entry to the MAC address table.</div> <div><div>Example</div><div><ul style="list-style-type: none">This command adds a static entry for unicast MAC address 0012.3694.03ec to the MAC address table. <pre>switch(config)#mac address-table static 0012.3694.03ec vlan 3 interface Ethernet 7 switch(config)#show mac address-table static</pre></div></div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 624.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 494; Arista User Manual, v. 4.11.1 (1/11/13), at 427-28; Arista User Manual, v. 4.11.1 (1/11/13), at; Arista User Manual v. 4.10.3 (10/22/12), at 331; Arista User Manual v. 4.9.3.2 (5/3/12), at 321-22.</p>
Command	Description					
show mac address-table	Displays information about the MAC address table.					
Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<div><div>Examples</div><div>This example shows how to add a static entry to the MAC address table: <pre>switch(config)# mac address-table static 0050.3e8d.6400 vlan 3 interface ethernet 2/1 switch(config)#</pre></div></div> <div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>show mac address-table</td><td>Displays information about the MAC address table.</td></tr></table></div> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 4.0 (2008), at L2-13.</p>	Command	Description	show mac address-table	Displays information about the MAC address table.	<div>The <code>mac address-table static</code> command adds a static entry to the MAC address table.</div> <div><div>Example</div><div><ul style="list-style-type: none">This command adds a static entry for unicast MAC address 0012.3694.03ec to the MAC address table. <pre>switch(config)#mac address-table static 0012.3694.03ec vlan 3 interface Ethernet 7 switch(config)#show mac address-table static</pre></div></div> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 624.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 494; Arista User Manual, v. 4.11.1 (1/11/13), at 427-28; Arista User Manual, v. 4.11.1 (1/11/13), at; Arista User Manual v. 4.10.3 (10/22/12), at 331; Arista User Manual v. 4.9.3.2 (5/3/12), at 321-22.</p>
Command	Description					
show mac address-table	Displays information about the MAC address table.					

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td>show spanning-tree mst configuration</td><td>Displays information about the MST protocol.</td></tr> <tr> <td></td><td>spanning-tree mst configuration</td><td>Enters MST configuration submode.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 24.</p>	Related Commands	Command	Description		show spanning-tree mst configuration	Displays information about the MST protocol.		spanning-tree mst configuration	Enters MST configuration submode.	<p>show spanning-tree mst configuration</p> <p>The show spanning-tree mst configuration command displays information about the MST region's VLAN-to-instance mapping. The command provides two display options:</p> <ul style="list-style-type: none"> • default displays a table that lists the instance to VLAN map. • digest displays the configuration digest. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 991.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 869; Arista User Manual, v. 4.11.1 (1/11/13), at 687; Arista User Manual v. 4.10.3 (10/22/12), at 601; Arista User Manual v. 4.9.3.2 (5/3/12), at 520; Arista User Manual v. 4.8.2 (11/18/11), at 394; Arista User Manual v. 4.7.3 (7/18/11), at 283.</p>
Related Commands	Command	Description									
	show spanning-tree mst configuration	Displays information about the MST protocol.									
	spanning-tree mst configuration	Enters MST configuration submode.									
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td>show spanning-tree mst configuration</td><td>Displays information about the MST protocol.</td></tr> <tr> <td></td><td>spanning-tree mst configuration</td><td>Enters MST configuration submode.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-26.</p>	Related Commands	Command	Description		show spanning-tree mst configuration	Displays information about the MST protocol.		spanning-tree mst configuration	Enters MST configuration submode.	<p>show spanning-tree mst configuration</p> <p>The show spanning-tree mst configuration command displays information about the MST region's VLAN-to-instance mapping. The command provides two display options:</p> <ul style="list-style-type: none"> • default displays a table that lists the instance to VLAN map. • digest displays the configuration digest. <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 991.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 869; Arista User Manual, v. 4.11.1 (1/11/13), at 687; Arista User Manual v. 4.10.3 (10/22/12), at 601; Arista User Manual v. 4.9.3.2 (5/3/12), at 520; Arista User Manual v. 4.8.2 (11/18/11), at 394; Arista User Manual v. 4.7.3 (7/18/11), at 283.</p>
Related Commands	Command	Description									
	show spanning-tree mst configuration	Displays information about the MST protocol.									
	spanning-tree mst configuration	Enters MST configuration submode.									

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Related Commands	Command	Description									
	show spanning-tree mst configuration	Displays information about the MST protocol.									
	spanning-tree mst configuration	Enters MST configuration submode.									
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display VTP interface switchport information on the device:</p> <pre>switch# show interface switchport Name: Ethernet8/11 Switchport: Enabled Switchport Monitor: Not enabled Operational Mode: trunk Access Mode VLAN: 1 (default) Trunking Native Mode VLAN: 1 (default) Trunking VLANs Enabled: 1,10,20-30 Pruning VLANs Enabled: 2-1001 Administrative private-vlan primary host-association: none Administrative private-vlan secondary host-association: none Administrative private-vlan primary mapping: none Administrative private-vlan secondary mapping: none Administrative private-vlan trunk native VLAN: none Administrative private-vlan trunk encapsulation: dot1q Administrative private-vlan trunk normal VLANs: none Administrative private-vlan trunk private VLANs: none Operational private-vlan: none switch#</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 44.</p>	<p>Example</p> <ul style="list-style-type: none"> These commands create the trunk mode allowed VLAN list of 6-10 for Ethernet interface 14, then verifies the VLAN list. <pre>switch(config)#interface ethernet 14 switch(config-if-Et14)#switchport trunk allowed vlan 6-10 switch(config-if-Et14)#show interfaces ethernet 14 switchport Name: Et14 Switchport: Enabled Administrative Mode: trunk Operational Mode: trunk Access Mode VLAN: 1 (inactive) Trunking Native Mode VLAN: 1 (inactive) Administrative Native VLAN tagging: disabled Trunking VLANs Enabled: 6-10 Trunk Groups: switch(config-if-Et14)#</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 798.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 645; Arista User Manual, v. 4.11.1 (1/11/13), at 498; Arista User Manual v. 4.10.3 (10/22/12), at 416; Arista User Manual v. 4.9.3.2 (5/3/12), at 355.</p>									

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display information about the specified VLAN. This command displays statistical information gathered on the VLAN at 1-minute intervals:</p> <pre> switch# show interface vlan 5 Vlan5 is administratively down, line protocol is down Hardware is EtherSVI, address is 0000.0000.0000 MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive not supported ARP type: ARPA Last clearing of "show interface" counters 01:21:55 1 minute input rate 0 bytes/sec, 0 packets/sec 1 minute output rate 0 bytes/sec, 0 packets/sec L3 Switched: input: 0 pkts, 0 bytes - output: 0 pkts, 0 bytes L3 in Switched: ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes L3 out Switched: ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes </pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 49.</p>	<p>Example</p> <ul style="list-style-type: none"> This command display configuration and status information for Ethernet interface 1 and 2. <pre> switch>show interfaces ethernet 1-2 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.2481.7647 (bia 001c.2481.7647) Description: mkt.1 MTU 9212 bytes, BW 10000000 Kbit Full-duplex 10Gb/s auto negotiation: off Last clearing of "show interface" counters never 5 seconds input rate 33.5 Mbps (0.3% with framing), 846 packets/sec 5 seconds output rate 180 kbps (0.0% with framing), 55 packets/sec 76437268 packets input, 94280286608 bytes Received 2208 broadcasts, 73358 multicast 0 runts, 0 giants 0 input errors, 0 CRC, 0 alignment, 0 symbol 0 PAUSE input 6184281 packets output, 4071319140 bytes Sent 2209 broadcasts, 345754 multicast 0 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output </pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 437.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display information about the specified VLAN. This command displays statistical information gathered on the VLAN at 1-minute intervals:</p> <pre>switch# show interface vlan 5 Vlan5 is administratively down, line protocol is down Hardware is EtherSVI, address is 0000.0000.0000 MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive not supported ARP type: ARPA Last clearing of "show interface" counters 01:21:55 1 minute input rate 0 bytes/sec, 0 packets/sec 1 minute output rate 0 bytes/sec, 0 packets/sec L3 Switched: input: 0 pkts, 0 bytes - output: 0 pkts, 0 bytes L3 in Switched: ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes L3 out Switched: ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at 46.</p>	<p>Example</p> <ul style="list-style-type: none"> This command display configuration and status information for Ethernet interface 1 and 2. <pre>switch>show interfaces ethernet 1-2 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.2481.7647 (bia 001c.2481.7647) Description: mkt.1 MTU 9212 bytes, BW 10000000 Kbit Full-duplex 10Gb/s auto negotiation: off Last clearing of "show interface" counters never 5 seconds input rate 33.5 Mbps (0.3% with framing), 846 packets/sec 5 seconds output rate 180 kbps (0.0% with framing), 55 packets/sec 76437268 packets input, 94280286608 bytes Received 2208 broadcasts, 73358 multicast 0 runs, 0 giants 0 input errors, 0 CRC, 0 alignment, 0 symbol 0 PAUSE input 6184281 packets output, 4071319140 bytes Sent 2209 broadcasts, 345754 multicast 0 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 437.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>show mac address-table</p> <p>To display the information about the MAC address table use the show mac address-table command.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 54.</p>	<p>14.3.2 Displaying the MAC Address Table</p> <p>The show mac address-table command displays the specified MAC address table entries.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 626.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 496; Arista User Manual, v. 4.11.1 (1/11/13), at 402; Arista User Manual v. 4.10.3 (10/22/12), at 360; Arista User Manual v. 4.9.3.2 (5/3/12), at 333.</p>

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<p>show mac address-table</p> <p>To display the information about the MAC address table, use the show mac address-table command.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2010), at L-51.</p>	<p>14.3.2 Displaying the MAC Address Table</p> <p>The show mac address-table command displays the specified MAC address table entries.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 626.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 496; Arista User Manual, v. 4.11.1 (1/11/13), at 402; Arista User Manual v. 4.10.3 (10/22/12), at 360; Arista User Manual v. 4.9.3.2 (5/3/12), at 333.</p>				
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>mac address-table static</td><td>Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 40.</p>	Command	Description	mac address-table static	Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.	<p>mac address-table static</p> <p>The mac address-table static command adds a static entry to the MAC address table. Each table entry references a MAC address, a VLAN, and a list of layer 2 (Ethernet or port channel) ports. The table supports three entry types: unicast drop, unicast, and multicast.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 664</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 532; Arista User Manual, v. 4.11.1 (1/11/13), at 427.</p>
Command	Description					
mac address-table static	Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.					
Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>mac address-table static</td><td>Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2013), at L2-53.</p>	Command	Description	mac address-table static	Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.	<p>mac address-table static</p> <p>The mac address-table static command adds a static entry to the MAC address table. Each table entry references a MAC address, a VLAN, and a list of layer 2 (Ethernet or port channel) ports. The table supports three entry types: unicast drop, unicast, and multicast.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 664</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 532; Arista User Manual, v. 4.11.1 (1/11/13), at 427.</p>
Command	Description					
mac address-table static	Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.					

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Cisco IOS 5.1 Effective date of registration: 11/28/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>mac address-table static</td><td>Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.</td></tr></table> Cisco IOS Security Command Reference (2010), at SEC-2374.	Command	Description	mac address-table static	Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.	<div>mac address-table static</div> <p>The mac address-table static command adds a static entry to the MAC address table. Each table entry references a MAC address, a VLAN, and a list of layer 2 (Ethernet or port channel) ports. The table supports three entry types: unicast drop, unicast, and multicast.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 664</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 532; Arista User Manual, v. 4.11.1 (1/11/13), at 427.</p>
Command	Description					
mac address-table static	Adds static entries to the MAC address table or configures a static MAC address with IGMP snooping disabled for that address.					
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>mac address-table aging-time</td><td>Configures the aging time for entries in the Layer 2 table.</td></tr></table> Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 57.	Command	Description	mac address-table aging-time	Configures the aging time for entries in the Layer 2 table.	<p>The mac address-table aging-time command configures the aging time for MAC address table dynamic entries. Aging time defines the period an entry is in the table, as measured from the most recent reception of a frame on the entry's VLAN from the specified MAC address. The switch removes entries when their presence in the MAC address table exceeds the aging time.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 662</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 496; Arista User Manual, v. 4.11.1 (1/11/13), at 426; Arista User Manual v. 4.10.3 (10/22/12), at 332; Arista User Manual v. 4.9.3.2 (5/3/12), at 320.</p>
Command	Description					
mac address-table aging-time	Configures the aging time for entries in the Layer 2 table.					
Cisco IOS 5.1 Effective date of registration: 11/28/201	<table><tr><th>Command</th><th>Description</th></tr><tr><td>mac address-table aging-time</td><td>Configures the aging time for entries in the Layer 2 table.</td></tr></table> Cisco IOS Security Command Reference (2010), at SEC-2374.	Command	Description	mac address-table aging-time	Configures the aging time for entries in the Layer 2 table.	<p>The mac address-table aging-time command configures the aging time for MAC address table dynamic entries. Aging time defines the period an entry is in the table, as measured from the most recent reception of a frame on the entry's VLAN from the specified MAC address. The switch removes entries when their presence in the MAC address table exceeds the aging time.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 662</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 496; Arista User Manual, v. 4.11.1 (1/11/13), at 426; Arista User Manual v. 4.10.3 (10/22/12), at 332; Arista User Manual v. 4.9.3.2 (5/3/12), at 320.</p>
Command	Description					
mac address-table aging-time	Configures the aging time for entries in the Layer 2 table.					

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>mac address-table aging-time</td><td>Configures the aging time for entries in the Layer 2 table.</td></tr></table> Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L-54.	Command	Description	mac address-table aging-time	Configures the aging time for entries in the Layer 2 table.	<p>The <code>mac address-table aging-time</code> command configures the aging time for MAC address table dynamic entries. Aging time defines the period an entry is in the table, as measured from the most recent reception of a frame on the entry's VLAN from the specified MAC address. The switch removes entries when their presence in the MAC address table exceeds the aging time.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 662</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 496; Arista User Manual, v. 4.11.1 (1/11/13), at 426; Arista User Manual v. 4.10.3 (10/22/12), at 332; Arista User Manual v. 4.9.3.2 (5/3/12), at 320.</p>
Command	Description					
mac address-table aging-time	Configures the aging time for entries in the Layer 2 table.					
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>Examples</p> <p>This example shows how to display STP when you are running Rapid PVST+:</p> <pre>switch# show spanning-tree</pre> <pre>VLAN0001 Spanning tree enabled protocol rstp Root ID Priority 32769 Address 000d.eca3.9f01 Cost 4 Port 4105 (port-channel10) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 32769 (priority 32768 sys-id-ext 1) Address 0022.5579.7641 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role Sts Cost Prio.Nbr Type ----- Po10 Root FWD 2 128.4105 (vpc peer-link) P2p Po20 Desg FWD 1 128.4115 (vpc) P2p Po30 Root FWD 1 128.4125 (vpc) P2p</pre> Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, (2013), at 63.	<p>Show commands (such as <code>show spanning-tree</code>) displays the RSTP instance as MST0 (MST instance 0).</p> <p>Example</p> <ul style="list-style-type: none">This command, while the switch is in RST mode, displays RST instance information. <pre>switch(config)#show spanning-tree</pre> <pre>MST0 Spanning tree enabled protocol rstp Root ID Priority 32768 Address 001c.730c.1867 This bridge is the root Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 001c.730c.1867 Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec Interface Role State Cost Prio.Nbr Type ----- Et51 designated forwarding 2000 128.51 P2p</pre> <p>switch(config)#</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 960.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 838; Arista User Manual, v. 4.11.1 (1/11/13), at 656; Arista User Manual v. 4.10.3 (10/22/12), at 570; Arista User Manual v. 4.9.3.2 (5/3/12), at 490; Arista User Manual v. 4.8.2 (11/18/11), at 364; Arista User Manual v. 4.7.3 (7/18/11), at 238; Arista User Manual v. 4.6.0 (12/22/2010), at 268.</p>				

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to display STP when you are running Rapid PVST+:</div> <div>switch# show spanning-tree</div> <div>VLAN0001</div> <div>Spanning tree enabled protocol rstp</div> <div>Root ID Priority 32769</div> <div> Address 000d.eca3.9f01</div> <div> Cost 4</div> <div> Port 4105 (port-channel10)</div> <div> Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec</div> <div>Bridge ID Priority 32769 (priority 32768 sys-id-ext 1)</div> <div> Address 0022.5579.7641</div> <div> Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec</div> <div>Interface Role Sts Cost Prio.Nbr Type</div> <div>Po10 Root FWD 2 128.4105 (vPC peer-link) P2p</div> <div>Po20 Desg FWD 1 128.4115 (vPC) P2p</div> <div>Po30 Root FWD 1 128.4125 (vPC) P2p</div> <div>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L59-60.</div>	<div>Show commands (such as <code>show spanning-tree</code>) displays the RSTP instance as MST0 (MST instance 0).</div> <div>Example</div> <div>• This command, while the switch is in RST mode, displays RST instance information.</div> <div>switch(config)#show spanning-tree</div> <div>MST0</div> <div>Spanning tree enabled protocol rstp</div> <div>Root ID Priority 32768</div> <div> Address 001c.730c.1867</div> <div> This bridge is the root</div> <div><---RSTP mode indicator</div> <div>Bridge ID Priority 32768 (priority 32768 sys-id-ext 0)</div> <div> Address 001c.730c.1867</div> <div> Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec</div> <div>Interface Role State Cost Prio.Nbr Type</div> <div>Et51 designated forwarding 2000 128.51 P2p</div> <div>switch(config)#</div> <div>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 960.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 838; Arista User Manual, v. 4.11.1 (1/11/13), at 656; Arista User Manual v. 4.10.3 (10/22/12), at 570; Arista User Manual v. 4.9.3.2 (5/3/12), at 490; Arista User Manual v. 4.8.2 (11/18/11), at 364; Arista User Manual v. 4.7.3 (7/18/11), at 238; Arista User Manual v. 4.6.0 (12/22/2010), at 268.</div>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display STP information when you are running MST:</p> <pre>switch# show spanning-tree</pre> <pre>MST0000 Spanning tree enabled protocol mstp Root ID Priority 32768 Address 0018.bad8.fc150 Cost 0 Port 258 (Ethernet 2/2) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec</pre> <pre> Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 0018.bad8.239d Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role Sts Cost Prio.Nbr Type ----- Eth2/1 Aith BKN 20000 128.257 Network, P2p BA_irc. Eth2/2 Root FWD 20000 128.258 Edge, P2p Eth3/48 Desg FWD 20000 128.43228 P2p</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 64</p>	<p>This command displays output from the show spanning-tree command:</p> <pre>Switch#show spanning-tree</pre> <pre>MST0 Spanning tree enabled protocol mstp Root ID Priority 32768 Address 0011.2201.0301 This bridge is the root</pre> <pre> Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 0011.2201.0301 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role State Cost Prio.Nbr Type ----- Et4 designated forwarding 2000 128.4 P2p Et5 designated forwarding 2000 128.5 P2p ... PEt4 designated forwarding 2000 128.31 P2p PEt5 designated forwarding 2000 128.44 P2p ... Po3 designated forwarding 1999 128.1003 P2p</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 861; Arista User Manual, v. 4.11.1 (1/11/13), at 679; Arista User Manual v. 4.10.3 (10/22/12), at 593; Arista User Manual v. 4.9.3.2 (5/3/12), at 512; Arista User Manual v. 4.8.2 (11/18/11), at 386; Arista User Manual v. 4.7.3 (7/18/11), at 275; Arista User Manual v. 4.6.0 (12/22/2010), at 295</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display STP information when you are running MST:</p> <pre>switch# show spanning-tree</pre> <pre>MST0000 Spanning tree enabled protocol mstp Root ID Priority 32768 Address 0018.bad8.fc150 Cost 0 Port 258 (Ethernet 2/2) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec</pre> <pre> Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 0018.bad8.239d Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role Sts Cost Prio.Nbr Type ----- Eth2/1 Aith BKN 20000 128.257 Network, P2p BA_irc. Eth2/2 Root FWD 20000 128.258 Edge, P2p Eth3/48 Desg FWD 20000 128.43228 P2p</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-59:L2-61</p>	<p>This command displays output from the show spanning-tree command:</p> <pre>Switch#show spanning-tree</pre> <pre>MST0 Spanning tree enabled protocol mstp Root ID Priority 32768 Address 0011.2201.0301 This bridge is the root</pre> <pre> Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 0011.2201.0301 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role State Cost Prio.Nbr Type ----- Et4 designated forwarding 2000 128.4 P2p Et5 designated forwarding 2000 128.5 P2p ... PEt4 designated forwarding 2000 128.31 P2p PEt5 designated forwarding 2000 128.44 P2p ... Po3 designated forwarding 1999 128.1003 P2p</pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 861; Arista User Manual, v. 4.11.1 (1/11/13), at 679; Arista User Manual v. 4.10.3 (10/22/12), at 593; Arista User Manual v. 4.9.3.2 (5/3/12), at 512; Arista User Manual v. 4.8.2 (11/18/11), at 386; Arista User Manual v. 4.7.3 (7/18/11), at 275; Arista User Manual v. 4.6.0 (12/22/2010), at 295</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Spanning tree enabled protocol rstp</div> <table><tr><td>Root ID</td><td>Priority</td><td>32770</td></tr><tr><td>Address</td><td colspan="2">000d.eca3.9f01</td></tr><tr><td>Cost</td><td colspan="2">4</td></tr><tr><td>Port</td><td colspan="2">4105 (port-channel10)</td></tr><tr><td>Hello Time</td><td>2 sec</td><td>Max Age 20 sec</td><td>Forward Delay 15 sec</td></tr></table> <div>Bridge ID</div> <table><tr><td>Priority</td><td>32770 (priority 32768 sys-id-ext 2)</td></tr><tr><td>Address</td><td>0022.5579.7641</td></tr><tr><td>Hello Time</td><td>2 sec</td><td>Max Age 20 sec</td><td>Forward Delay 15 sec</td></tr></table> <table><tr><th>Interface</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr><tr><td>Po10</td><td>Root</td><td>FWD</td><td>2</td><td>128.4105</td><td>(vPC peer-link) P2p</td></tr><tr><td>Po20</td><td>Desg</td><td>FWD</td><td>1</td><td>128.4115</td><td>(vPC) P2p</td></tr><tr><td>Po30</td><td>Root</td><td>FWD</td><td>1</td><td>128.4125</td><td>(vPC) P2p</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference at 67</p>	Root ID	Priority	32770	Address	000d.eca3.9f01		Cost	4		Port	4105 (port-channel10)		Hello Time	2 sec	Max Age 20 sec	Forward Delay 15 sec	Priority	32770 (priority 32768 sys-id-ext 2)	Address	0022.5579.7641	Hello Time	2 sec	Max Age 20 sec	Forward Delay 15 sec	Interface	Role	Sts	Cost	Prio.Nbr	Type	Po10	Root	FWD	2	128.4105	(vPC peer-link) P2p	Po20	Desg	FWD	1	128.4115	(vPC) P2p	Po30	Root	FWD	1	128.4125	(vPC) P2p	<div>Spanning tree enabled protocol rstp</div> <table><tr><td>Root ID</td><td>Priority</td><td>32768</td></tr><tr><td>Address</td><td colspan="2">001c.7301.07b9</td></tr><tr><td>Cost</td><td colspan="2">1999 (Ext) 0 (Int)</td></tr><tr><td>Port</td><td colspan="2">101 (Port-Channel2)</td></tr><tr><td>Hello Time</td><td>2.000 sec</td><td>Max Age 20 sec</td><td>Forward Delay 15 sec</td></tr></table> <div>Bridge ID</div> <table><tr><td>Priority</td><td>32768 (priority 32768 sys-id-ext 0)</td></tr><tr><td>Address</td><td>001c.7304.195b</td></tr><tr><td>Hello Time</td><td>2.000 sec</td><td>Max Age 20 sec</td><td>Forward Delay 15 sec</td></tr></table> <table><tr><th>Interface</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr><tr><td>Et4</td><td>designated forwarding</td><td>20000</td><td>128.4</td><td>P2p</td></tr><tr><td>Et5</td><td>designated forwarding</td><td>20000</td><td>128.5</td><td>P2p</td></tr><tr><td>Et6</td><td>designated forwarding</td><td>20000</td><td>128.6</td><td>P2p</td></tr><tr><td>Et23</td><td>designated forwarding</td><td>20000</td><td>128.23</td><td>P2p</td></tr><tr><td>Et26</td><td>designated forwarding</td><td>20000</td><td>128.26</td><td>P2p</td></tr><tr><td>Et32</td><td>designated forwarding</td><td>2000</td><td>128.32</td><td>P2p</td></tr></table> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 861; Arista User Manual, v. 4.11.1 (1/11/13), at 679; Arista User Manual v. 4.10.3 (10/22/12), at 593; Arista User Manual v. 4.9.3.2 (5/3/12), at 512; Arista User Manual v. 4.8.2 (11/18/11), at 386; Arista User Manual v. 4.7.3 (7/18/11), at 275; Arista User Manual v. 4.6.0 (12/22/2010), at 268</p>	Root ID	Priority	32768	Address	001c.7301.07b9		Cost	1999 (Ext) 0 (Int)		Port	101 (Port-Channel2)		Hello Time	2.000 sec	Max Age 20 sec	Forward Delay 15 sec	Priority	32768 (priority 32768 sys-id-ext 0)	Address	001c.7304.195b	Hello Time	2.000 sec	Max Age 20 sec	Forward Delay 15 sec	Interface	Role	State	Cost	Prio.Nbr	Type	Et4	designated forwarding	20000	128.4	P2p	Et5	designated forwarding	20000	128.5	P2p	Et6	designated forwarding	20000	128.6	P2p	Et23	designated forwarding	20000	128.23	P2p	Et26	designated forwarding	20000	128.26	P2p	Et32	designated forwarding	2000	128.32	P2p
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Et6	designated forwarding	20000	128.6	P2p																																																																																																										
Et23	designated forwarding	20000	128.23	P2p																																																																																																										
Et26	designated forwarding	20000	128.26	P2p																																																																																																										
Et32	designated forwarding	2000	128.32	P2p																																																																																																										

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<pre> Spanning tree enabled protocol rstp Root ID Priority 32768 Address 000d.eca3.9f01 Cost 4 Port 4105 (port-channel10) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 32770 (priority 32768 sys-id-ext 2) Address 0022.5579.7641 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role Sts Cost Prio.Nbr Type ----- Po10 Root FWD 2 128.4105 (vPC peer-link) P2p Po20 Desg FWD 1 128.4115 (vPC) P2p Po30 Root FWD 1 128.4125 (vPC) P2p </pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-59:L2-64</p>	<pre> Spanning tree enabled protocol rstp Root ID Priority 32768 Address 001c.7301.07b9 Cost 1999 (Ext) 0 (Int) Port 101 (Port-Channel12) Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 001c.7304.195b Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec Interface Role State Cost Prio.Nbr Type ----- Et4 designated forwarding 20000 128.4 P2p Et5 designated forwarding 20000 128.5 P2p Et6 designated forwarding 20000 128.6 P2p Et23 designated forwarding 20000 128.23 P2p Et26 designated forwarding 20000 128.26 P2p Et32 designated forwarding 2000 128.32 P2p </pre> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 861; Arista User Manual, v. 4.11.1 (1/11/13), at 679; Arista User Manual v. 4.10.3 (10/22/12), at 593; Arista User Manual v. 4.9.3.2 (5/3/12), at 512; Arista User Manual v. 4.8.2 (11/18/11), at 386; Arista User Manual v. 4.7.3 (7/18/11), at 275; Arista User Manual v. 4.6.0 (12/22/2010), at 268</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display detailed information about the STP configuration:</p> <pre>switch(config)# show spanning-tree detail</pre> <p>VLAN0001 is executing the rstp compatible Spanning Tree protocol</p> <p>Bridge Identifier has priority 32768, sysid 1, address 0022.5579.7641</p> <p>Configured hello time 2, max age 20, forward delay 15</p> <p>Current root has priority 32769, address 000d.eca3.9f01</p> <p>Root port is 4105 (port-channel10), cost of root path is 4</p> <p>Topology change flag not set, detected flag not set</p> <p>Number of topology changes 1 last change occurred 20:24:36 ago</p> <p>from port-channel10</p> <p>Times: hold 1, topology change 35, notification 2</p> <p>hello 2, max age 20, forward delay 15</p> <p>Timers: hello 0, topology change 0, notification 0</p> <p>Port 4105 (port-channel10, VPC Peer-link) of VLAN0001 is root forwarding</p> <p>Port path cost 2, Port priority 128, Port Identifier 128.4105</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 0022.5579.7341</p> <p>Designated port id is 128.4105, designated path cost 2</p> <p>Timers: message age 16, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 36729, received 36739</p> <p>Port 4115 (port-channel20, VPC) of VLAN0001 is designated forwarding</p> <p>Port path cost 1, Port priority 128, Port Identifier 128.4115</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 0022.5579.7341</p> <p>Designated port id is 128.4115, designated path cost 2</p> <p>Timers: message age 0, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 0</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 0, received 0</p> <p>Port 4125 (port-channel30, VPC) of VLAN0001 is root forwarding</p> <p>Port path cost 1, Port priority 128, Port Identifier 128.4125</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 000d.eca3.9f01</p> <p>Designated port id is 128.4125, designated path cost 0</p> <p>Timers: message age 0, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 0</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 0, received 0</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 74-75Release 6.x (2013), at 73</p>	<ul style="list-style-type: none"> This command displays STP data, including an information block for each interface running STP. <pre>switch>show spanning-tree vlan 1000 detail</pre> <p>MST0 is executing the rstp Spanning Tree protocol</p> <p>Bridge Identifier has priority 32768, sysid 0, address 001c.7304.195b</p> <p>Configured hello time 2.000, max age 20, forward delay 15, transmit hold-count 6</p> <p>Current root has priority 32768, address 001c.7301.07b9</p> <p>Root port is 101 (Port-Channel12), cost of root path is 1999 (Ext) 0 (Int)</p> <p>Number of topology changes 4109 last change occurred 1292651 seconds ago</p> <p>from Ethernet13</p> <p>Port 4 (Ethernet4) of MST0 is designated forwarding</p> <p>Port path cost 20000, Port priority 128, Port Identifier 128.4.</p> <p>Designated root has priority 32768, address 001c.7301.07b9</p> <p>Designated bridge has priority 32768, address 001c.7304.195b</p> <p>Designated port id is 128.4, designated path cost 1999 (Ext) 0 (Int)</p> <p>Timers: message age 1, forward delay 15, hold 20</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default, Internal</p> <p>BPDU: sent 452252, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0</p> <p>Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400</p> <p>Port 5 (Ethernet5) of MST0 is designated forwarding</p> <p>Port path cost 20000, Port priority 128, Port Identifier 128.5.</p> <p>Designated root has priority 32768, address 001c.7301.07b9</p> <p>Designated bridge has priority 32768, address 001c.7304.195b</p> <p>Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int)</p> <p>Timers: message age 1, forward delay 15, hold 20</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default, Internal</p> <p>BPDU: sent 1006266, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0</p> <p>Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 984.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 862; Arista User Manual, v. 4.11.1 (1/11/13), at 680; Arista User Manual v. 4.10.3 (10/22/12), at 594; Arista User Manual v. 4.9.3.2 (5/3/12), at 513; Arista User Manual v. 4.8.2 (11/18/11), at 387; Arista User Manual v. 4.7.3 (7/18/11), at 276.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display detailed information about the STP configuration:</p> <pre>switch(config)# show spanning-tree detail</pre> <p>VLAN0001 is executing the rstp compatible Spanning Tree protocol</p> <p>Bridge Identifier has priority 32768, sysid 1, address 0022.5579.7641</p> <p>Configured hello time 2, max age 20, forward delay 15</p> <p>Current root has priority 32769, address 000d.eca3.9f01</p> <p>Root port is 4105 (port-channel10), cost of root path is 4</p> <p>Topology change flag not set, detected flag not set</p> <p>Number of topology changes 1 last change occurred 20:24:36 ago</p> <p>from port-channel10</p> <p>Times: hold 1, topology change 35, notification 2</p> <p>hello 2, max age 20, forward delay 15</p> <p>Timers: hello 0, topology change 0, notification 0</p> <p>Port 4105 (port-channel10, VPC Peer-link) of VLAN0001 is root forwarding</p> <p>Port path cost 2, Port priority 128, Port Identifier 128.4105</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 0022.5579.7341</p> <p>Designated port id is 128.4105, designated path cost 2</p> <p>Timers: message age 16, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 36729, received 36739</p> <p>Port 4115 (port-channel20, VPC) of VLAN0001 is designated forwarding</p> <p>Port path cost 1, Port priority 128, Port Identifier 128.4115</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 0022.5579.7341</p> <p>Designated port id is 128.4115, designated path cost 2</p> <p>Timers: message age 0, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 0</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 0, received 0</p> <p>Port 4125 (port-channel30, VPC) of VLAN0001 is root forwarding</p> <p>Port path cost 1, Port priority 128, Port Identifier 128.4125</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 000d.eca3.9f01</p> <p>Designated port id is 128.4125, designated path cost 0</p> <p>Timers: message age 0, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 0</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 0, received 0</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2010), at L2-71:L2-72</p>	<ul style="list-style-type: none"> This command displays STP data, including an information block for each interface running STP. <pre>switch>show spanning-tree vlan 1000 detail</pre> <p>MST0 is executing the rstp Spanning Tree protocol</p> <p>Bridge Identifier has priority 32768, sysid 0, address 001c.7304.195b</p> <p>Configured hello time 2.000, max age 20, forward delay 15, transmit hold-count 6</p> <p>Current root has priority 32768, address 001c.7301.07b9</p> <p>Root port is 101 (Port-Channel12), cost of root path is 1999 (Ext) 0 (Int)</p> <p>Number of topology changes 4109 last change occurred 1292651 seconds ago</p> <p>from Ethernet13</p> <p>Port 4 (Ethernet4) of MST0 is designated forwarding</p> <p>Port path cost 20000, Port priority 128, Port Identifier 128.4.</p> <p>Designated root has priority 32768, address 001c.7301.07b9</p> <p>Designated bridge has priority 32768, address 001c.7304.195b</p> <p>Designated port id is 128.4, designated path cost 1999 (Ext) 0 (Int)</p> <p>Timers: message age 1, forward delay 15, hold 20</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default, Internal</p> <p>BPDU: sent 452252, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0</p> <p>Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400</p> <p>Port 5 (Ethernet5) of MST0 is designated forwarding</p> <p>Port path cost 20000, Port priority 128, Port Identifier 128.5.</p> <p>Designated root has priority 32768, address 001c.7301.07b9</p> <p>Designated bridge has priority 32768, address 001c.7304.195b</p> <p>Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int)</p> <p>Timers: message age 1, forward delay 15, hold 20</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default, Internal</p> <p>BPDU: sent 1006266, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0</p> <p>Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 984.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 862; Arista User Manual, v. 4.11.1 (1/11/13), at 680; Arista User Manual v. 4.10.3 (10/22/12), at 594; Arista User Manual v. 4.9.3.2 (5/3/12), at 513; Arista User Manual v. 4.8.2 (11/18/11), at 387; Arista User Manual v. 4.7.3 (7/18/11), at 276.</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>This example shows how to display STP information about a specified interface when you are running Rapid PVST+:</p> <pre>switch(config)# show spanning-tree interface ethernet 8/2</pre> <table><thead><tr><th>Vlan</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>VLAN0001</td><td>Altn</td><td>BLK</td><td>20000</td><td>128.1025</td><td>P2p</td></tr><tr><td>VLAN0002</td><td>Desg</td><td>FWD</td><td>20000</td><td>128.1025</td><td>P2p</td></tr></tbody></table> <p>This example shows how to display STP information about a specified interface when you are running MST:</p> <pre>switch(config)# show spanning-tree interface ethernet 2/50</pre> <table><thead><tr><th>Mst</th><th>Instance</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>MST0000</td><td></td><td>Desg</td><td>FWD</td><td>20000</td><td>128.1281</td><td>P2p</td></tr></tbody></table> <p>This example shows how to display detailed STP information about a specified interface when you are running Rapid PVST+:</p> <pre>switch(config)# show spanning-tree interface ethernet 8/1 detail</pre> <p>Port 1025 (Ethernet8/1) of VLAN0001 is alternate blocking Port path cost 20000, Port priority 128, Port Identifier 128.1025 Designated root has priority 28672, address 0018.bad8.239d Designated bridge has priority 28672, address 0018.bad8.239d Designated port id is 128.1281, designated path cost 0 Timers: message age 15, forward delay 0, hold 0 Number of transitions to forwarding state: 1 Link type is point-to-point by default The port type is network by default. BPDU: sent 4657, received 188</p> <pre>Port 1025 (Ethernet8/1) of VLAN0002 is designated forwarding Port path cost 20000, Port priority 128, Port Identifier 128.1025 Designated root has priority 32770, address 0018.bad7.fc15 Designated bridge has priority 32770, address 0018.bad7.fc15 Designated port id is 128.1025, designated path cost 0 Timers: message age 0, forward delay 0, hold 0 Number of transitions to forwarding state: 1 Link type is point-to-point by default The port type is network by default. BPDU: sent 4838, received 0</pre>	Vlan	Role	Sts	Cost	Prio.Nbr	Type	VLAN0001	Altn	BLK	20000	128.1025	P2p	VLAN0002	Desg	FWD	20000	128.1025	P2p	Mst	Instance	Role	Sts	Cost	Prio.Nbr	Type	MST0000		Desg	FWD	20000	128.1281	P2p	<p>Examples</p> <ul style="list-style-type: none">This command displays an STP table for Ethernet 5 interface. <pre>switch#show spanning-tree interface ethernet 5</pre> <table><thead><tr><th>Instance</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>MST0</td><td>designated</td><td>forwarding</td><td>20000</td><td>128.5</td><td>P2p</td></tr></tbody></table> <pre>switch></pre> <ul style="list-style-type: none">This command displays a data block for Ethernet interface 5. <pre>switch#show spanning-tree interface ethernet 5 detail</pre> <p>Port 5 (Ethernet5) of MST0 is designated forwarding Port path cost 20000, Port priority 128, Port Identifier 128.5. Designated root has priority 32768, address 001c.7301.07b9 Designated bridge has priority 32768, address 001c.7304.195b Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int) Timers: message age 1, forward delay 15, hold 20 Number of transitions to forwarding state: 1 Link type is point-to-point by default, Internal BPDU: sent 1008766, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0 Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400<pre>switch></pre><p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 988.</p><p>See also Arista User Manual v. 4.12.3 (7/17/13), at 866; Arista User Manual, v. 4.11.1 (1/11/13), at 684; Arista User Manual v. 4.10.3 (10/22/12), at 598; Arista User Manual v. 4.9.3.2 (5/3/12), at 517; Arista User Manual v. 4.8.2 (11/18/11), at 391; Arista User Manual v. 4.7.3 (7/18/11), at 280.</p></p>	Instance	Role	State	Cost	Prio.Nbr	Type	MST0	designated	forwarding	20000	128.5	P2p
	Vlan	Role	Sts	Cost	Prio.Nbr	Type																																								
VLAN0001	Altn	BLK	20000	128.1025	P2p																																									
VLAN0002	Desg	FWD	20000	128.1025	P2p																																									
Mst	Instance	Role	Sts	Cost	Prio.Nbr	Type																																								
MST0000		Desg	FWD	20000	128.1281	P2p																																								
Instance	Role	State	Cost	Prio.Nbr	Type																																									
MST0	designated	forwarding	20000	128.5	P2p																																									
	Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 77.																																													

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<p>This example shows how to display STP information about a specified interface when you are running Rapid PVST+:</p> <pre>switch(config)# show spanning-tree interface ethernet 8/2</pre> <table><thead><tr><th>Vlan</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>VLAN0001</td><td>Altn</td><td>BLK</td><td>20000</td><td>128.1025</td><td>P2p</td></tr><tr><td>VLAN0002</td><td>Desg</td><td>FWD</td><td>20000</td><td>128.1025</td><td>P2p</td></tr></tbody></table> <p>This example shows how to display STP information about a specified interface when you are running MST:</p> <pre>switch(config)# show spanning-tree interface ethernet 2/50</pre> <table><thead><tr><th>Mst</th><th>Instance</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>MST0000</td><td></td><td>Desg</td><td>FWD</td><td>20000</td><td>128.1281</td><td>P2p</td></tr></tbody></table> <p>This example shows how to display detailed STP information about a specified interface when you are running Rapid PVST+:</p> <pre>switch(config)# show spanning-tree interface ethernet 8/1 detail</pre> <p>Port 1025 (Ethernet8/1) of VLAN0001 is alternate blocking Port path cost 20000, Port priority 128, Port Identifier 128.1025 Designated root has priority 28672, address 0018.bad8.239d Designated bridge has priority 28672, address 0018.bad8.239d Designated port id is 128.1281, designated path cost 0 Timers: message age 15, forward delay 0, hold 0 Number of transitions to forwarding state: 1 Link type is point-to-point by default The port type is network by default. BPDU: sent 4657, received 188</p> <p>Port 1025 (Ethernet8/1) of VLAN0002 is designated forwarding Port path cost 20000, Port priority 128, Port Identifier 128.1025 Designated root has priority 32770, address 0018.bad7.fc15 Designated bridge has priority 32770, address 0018.bad7.fc15 Designated port id is 128.1025, designated path cost 0 Timers: message age 0, forward delay 0, hold 0 Number of transitions to forwarding state: 1 Link type is point-to-point by default The port type is network by default. BPDU: sent 4838, received 0</p>	Vlan	Role	Sts	Cost	Prio.Nbr	Type	VLAN0001	Altn	BLK	20000	128.1025	P2p	VLAN0002	Desg	FWD	20000	128.1025	P2p	Mst	Instance	Role	Sts	Cost	Prio.Nbr	Type	MST0000		Desg	FWD	20000	128.1281	P2p	<p>Examples</p> <ul style="list-style-type: none">This command displays an STP table for Ethernet 5 interface. <pre>switch#show spanning-tree interface ethernet 5</pre> <table><thead><tr><th>Instance</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>MST0</td><td>designated</td><td>forwarding</td><td>20000</td><td>128.5</td><td>P2p</td></tr></tbody></table> <pre>switch></pre> <ul style="list-style-type: none">This command displays a data block for Ethernet interface 5. <pre>switch#show spanning-tree interface ethernet 5 detail</pre> <p>Port 5 (Ethernet5) of MST0 is designated forwarding Port path cost 20000, Port priority 128, Port Identifier 128.5. Designated root has priority 32768, address 001c.7301.07b9 Designated bridge has priority 32768, address 001c.7304.195b Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int) Timers: message age 1, forward delay 15, hold 20 Number of transitions to forwarding state: 1 Link type is point-to-point by default, Internal BPDU: sent 1008766, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0 Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400</p> <pre>switch></pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 988.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 866; Arista User Manual, v. 4.11.1 (1/11/13), at 684; Arista User Manual v. 4.10.3 (10/22/12), at 598; Arista User Manual v. 4.9.3.2 (5/3/12), at 517; Arista User Manual v. 4.8.2 (11/18/11), at 391; Arista User Manual v. 4.7.3 (7/18/11), at 280.</p>	Instance	Role	State	Cost	Prio.Nbr	Type	MST0	designated	forwarding	20000	128.5	P2p
	Vlan	Role	Sts	Cost	Prio.Nbr	Type																																								
VLAN0001	Altn	BLK	20000	128.1025	P2p																																									
VLAN0002	Desg	FWD	20000	128.1025	P2p																																									
Mst	Instance	Role	Sts	Cost	Prio.Nbr	Type																																								
MST0000		Desg	FWD	20000	128.1281	P2p																																								
Instance	Role	State	Cost	Prio.Nbr	Type																																									
MST0	designated	forwarding	20000	128.5	P2p																																									
	<p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2010), at L2-74</p>																																													

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>switch# show spanning-tree mst</p> <pre> ##### MST0 vlans mapped: 1-4094 Bridge address 0018.bad7.fc15 priority 32768 (32768 sysid 0) Root this switch for the CIST Regional Root this switch Operational hello time 2 , forward delay 15, max age 20, txholdcount 6 Configured hello time 2 , forward delay 15, max age 20, max hops 20 Interface Role Sts Cost Prio.Nbr Type ----- Eth8/1 Desg FWD 20000 128.1025 P2p Eth8/2 Desg FWD 20000 128.1026 P2p </pre> <p>This example shows how to display STP information about a specific MST instance:</p> <pre> switch# show spanning-tree mst 0 ##### MST0 vlans mapped: 1-4094 Bridge address 0018.bad7.fc15 priority 32768 (32768 sysid 0) Root this switch for the CIST Regional Root this switch Operational hello time 2 , forward delay 15, max age 20, txholdcount 6 Configured hello time 2 , forward delay 15, max age 20, max hops 20 Interface Role Sts Cost Prio.Nbr Type ----- Eth8/1 Desg FWD 20000 128.1025 P2p Eth8/2 Desg FWD 20000 128.1026 P2p </pre> <p>This example shows how to display detailed STP information about the MST protocol:</p> <pre> switch# show spanning-tree mst detail ##### MST0 vlans mapped: 1-4094 Bridge address 0018.bad7.fc15 priority 32768 (32768 sysid 0) Root this switch for the CIST Regional Root this switch Operational hello time 2 , forward delay 15, max age 20, txholdcount 6 Configured hello time 2 , forward delay 15, max age 20, max hops 20 Eth8/1 of MST0 is designated forwarding Port info port id 128.1025 priority 128 cost 20000 Designated root address 0018.bad7.fc15 priority 32768 cost 0 Design. regional root address 0018.bad7.fc15 priority 32768 cost 0 Designated bridge address 0018.bad7.fc15 priority 32768 port id 128.1025 Timers: message expires in 0 sec, forward delay 0, forward transitions 1 Bpdus sent 1379, received 3 Eth8/2 of MST0 is designated forwarding Port info port id 128.1026 priority 128 cost 20000 Designated root address 0018.bad7.fc15 priority 32768 cost 0 Design. regional root address 0018.bad7.fc15 priority 32768 cost 0 Designated bridge address 0018.bad7.fc15 priority 32768 port id 128.1026 Timers: message expires in 0 sec, forward delay 0, forward transitions 1 Bpdus sent 1380, received 2 </pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 80.</p>	<p>Examples</p> <ul style="list-style-type: none"> This command displays interface data blocks for MST instance 3. <pre> switch# show spanning-tree mst 3 detail ##### MST3 vlans mapped: 3 Bridge address 0011.2233.4402 priority 32771 (32768 sysid 3) Root address 0011.2233.4401 priority 32771 (32768 sysid 3) Ethernet1 of MST3 is root forwarding Port info port id 128.1 priority 128 cost 2000 Designated root address 0011.2233.4401 priority 32768 cost 0 Designated bridge address 0011.2233.4401 priority 32768 port id 128.1 Ethernet2 of MST3 is alternate discarding Port info port id 128.2 priority 128 cost 2000 Designated root address 0011.2233.4401 priority 32768 cost 0 Designated bridge address 0011.2233.4401 priority 32768 port id 128.2 Ethernet3 of MST3 is designated forwarding Port info port id 128.3 priority 128 cost 2000 Designated root address 0011.2233.4402 priority 32768 cost 2000 Designated bridge address 0011.2233.4402 priority 32768 port id 128.3 </pre> <ul style="list-style-type: none"> This command displays interface tables for all MST instances. <pre> switch# show spanning-tree mst ##### MST0 vlans mapped: 1,4-4094 Bridge address 0011.2233.4402 priority 32768 (32768 sysid 0) Root address 0011.2233.4401 priority 32768 (32768 sysid 0) Regional Root address 0011.2233.4401 priority 32768 (32768 sysid 0) Interface Role State Cost Prio.Nbr Type ----- Et1 root forwarding 2000 128.1 P2p Et2 alternate discarding 2000 128.2 P2p Et3 designated forwarding 2000 128.3 P2p Et4 designated forwarding 2000 128.4 P2p ##### MST2 vlans mapped: 2 Bridge address 0011.2233.4402 priority 8194 (8192 sysid 2) Root this switch for MST2 Interface Role State Cost Prio.Nbr Type ----- Et1 designated forwarding 2000 128.1 P2p Et2 designated forwarding 2000 128.2 P2p Et3 designated forwarding 2000 128.3 P2p Et4 designated forwarding 2000 128.4 P2p ##### MST3 vlans mapped: 3 Bridge address 0011.2233.4402 priority 32771 (32768 sysid 3) Root address 0011.2233.4401 priority 32771 (32768 sysid 3) Interface Role State Cost Prio.Nbr Type ----- Et1 root forwarding 2000 128.1 P2p Et2 alternate discarding 2000 128.2 P2p Et3 designated forwarding 2000 128.3 P2p Et4 designated forwarding 2000 128.4 P2p </pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 990.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 867-68; Arista User Manual, v. 4.11.1 (1/11/13), at 685-86; Arista User Manual v. 4.10.3 (10/22/12), at 599-600; Arista User Manual v. 4.9.3.2 (5/3/12), at 518-19; Arista User Manual v. 4.8.2 (11/18/11), at 392-393; Arista User Manual</p>

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		v. 4.7.3 (7/18/11), at; Arista User Manual v. 4.7.3 (7/18/11), at 281-82.

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>switch# show spanning-tree mst</p> <pre> ##### MST0 vlans mapped: 1-4094 Bridge address 0018.bad7.fc15 priority 32768 (32768 sysid 0) Root this switch for the CIST Regional Root this switch Operational hello time 2 , forward delay 15, max age 20, txholdcount 6 Configured hello time 2 , forward delay 15, max age 20, max hops 20 Interface Role Sts Cost Prio.Nbr Type ----- Eth8/1 Desg FWD 20000 128.1025 P2p Eth8/2 Desg FWD 20000 128.1026 P2p </pre> <p>This example shows how to display STP information about a specific MST instance:</p> <pre> switch# show spanning-tree mst 0 ##### MST0 vlans mapped: 1-4094 Bridge address 0018.bad7.fc15 priority 32768 (32768 sysid 0) Root this switch for the CIST Regional Root this switch Operational hello time 2 , forward delay 15, max age 20, txholdcount 6 Configured hello time 2 , forward delay 15, max age 20, max hops 20 Interface Role Sts Cost Prio.Nbr Type ----- Eth8/1 Desg FWD 20000 128.1025 P2p Eth8/2 Desg FWD 20000 128.1026 P2p </pre> <p>This example shows how to display detailed STP information about the MST protocol:</p> <pre> switch# show spanning-tree mst detail ##### MST0 vlans mapped: 1-4094 Bridge address 0018.bad7.fc15 priority 32768 (32768 sysid 0) Root this switch for the CIST Regional Root this switch Operational hello time 2 , forward delay 15, max age 20, txholdcount 6 Configured hello time 2 , forward delay 15, max age 20, max hops 20 Eth8/1 of MST0 is designated forwarding Port info port id 128.1025 priority 128 cost 20000 Designated root address 0018.bad7.fc15 priority 32768 cost 0 Design. regional root address 0018.bad7.fc15 priority 32768 cost 0 Designated bridge address 0018.bad7.fc15 priority 32768 port id 128.1025 Timers: message expires in 0 sec, forward delay 0, forward transitions 1 Bpdus sent 1379, received 3 Eth8/2 of MST0 is designated forwarding Port info port id 128.1026 priority 128 cost 20000 Designated root address 0018.bad7.fc15 priority 32768 cost 0 Design. regional root address 0018.bad7.fc15 priority 32768 cost 0 Designated bridge address 0018.bad7.fc15 priority 32768 port id 128.1026 Timers: message expires in 0 sec, forward delay 0, forward transitions 1 Bpdus sent 1380, received 2 </pre>	<p>Examples</p> <ul style="list-style-type: none"> This command displays interface data blocks for MST instance 3. <pre> switch# show spanning-tree mst 3 detail ##### MST3 vlans mapped: 3 Bridge address 0011.2233.4402 priority 32771 (32768 sysid 3) Root address 0011.2233.4401 priority 32771 (32768 sysid 3) Ethernet1 of MST3 is root forwarding Port info port id 128.1 priority 128 cost 2000 Designated root address 0011.2233.4401 priority 32768 cost 0 Designated bridge address 0011.2233.4401 priority 32768 port id 128.1 Ethernet2 of MST3 is alternate discarding Port info port id 128.2 priority 128 cost 2000 Designated root address 0011.2233.4401 priority 32768 cost 0 Designated bridge address 0011.2233.4401 priority 32768 port id 128.2 Ethernet3 of MST3 is designated forwarding Port info port id 128.3 priority 128 cost 2000 Designated root address 0011.2233.4401 priority 32768 cost 2000 Designated bridge address 0011.2233.4402 priority 32768 port id 128.3 </pre> <ul style="list-style-type: none"> This command displays interface tables for all MST instances. <pre> switch# show spanning-tree mst ##### MST0 vlans mapped: 1,4-4094 Bridge address 0011.2233.4402 priority 32768 (32768 sysid 0) Root address 0011.2233.4401 priority 32768 (32768 sysid 0) Regional Root address 0011.2233.4401 priority 32768 (32768 sysid 0) Interface Role State Cost Prio.Nbr Type ----- Et1 root forwarding 2000 128.1 P2p Et2 alternate discarding 2000 128.2 P2p Et3 designated forwarding 2000 128.3 P2p Et4 designated forwarding 2000 128.4 P2p ##### MST2 vlans mapped: 2 Bridge address 0011.2233.4402 priority 8194 (8192 sysid 2) Root this switch for MST2 Interface Role State Cost Prio.Nbr Type ----- Et1 designated forwarding 2000 128.1 P2p Et2 designated forwarding 2000 128.2 P2p Et3 designated forwarding 2000 128.3 P2p Et4 designated forwarding 2000 128.4 P2p ##### MST3 vlans mapped: 3 Bridge address 0011.2233.4402 priority 32771 (32768 sysid 3) Root address 0011.2233.4401 priority 32771 (32768 sysid 3) Interface Role State Cost Prio.Nbr Type ----- Et1 root forwarding 2000 128.1 P2p Et2 alternate discarding 2000 128.2 P2p Et3 designated forwarding 2000 128.3 P2p Et4 designated forwarding 2000 128.4 P2p </pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 990.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 867-68; Arista User Manual, v. 4.11.1 (1/11/13), at 685-86; Arista User Manual v. 4.10.3 (10/22/12), at 599-600; Arista User Manual v. 4.9.3.2 (5/3/12), at 518-19; Arista User Manual v. 4.8.2 (11/18/11), at 392-393; Arista User Manual v. 4.7.3 (7/18/11), at; Arista User Manual v. 4.7.3 (7/18/11), at 281-82.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display information about the MST configuration:</p> <pre>switch)# show spanning-tree mst configuration</pre> <pre>Name: [mst-bldg-sj6/3] Revision: 1 Instances Configured: 3 Instance Vlans mapped ----- 0 1 2000 2-2000 4094 2001-4094 -----</pre> <p>This example shows how to display the MD5 digest included in the current MST configuration:</p> <pre>switch)# show spanning-tree mst configuration digest</pre> <pre>Name [mst-config] Revision 10 Instances configured 25 Digest 0x40D5ECA178C657835C83BBBCB16723192 Pre-std Digest 0x27BF112A75B72781ED928D9RC5BB4251</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 81.</p>	<p>Examples</p> <ul style="list-style-type: none"> This command displays the MST region's VLAN-to-instance map. <pre>switch>show spanning-tree mst configuration</pre> <pre>Name [] Revision 0 Instances configured 3 Instance Vlans mapped ----- 0 1,4-4094 2 2 3 3 ----- switch></pre> <ul style="list-style-type: none"> This command displays the MST region's configuration digest. <pre>switch>show spanning-tree mst configuration digest</pre> <pre>Name [] Revision 0 Instances configured 1 Digest 0xAC36177F50283CD4B83821D8AB26DE62 switch></pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 991.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 869; Arista User Manual, v. 4.11.1 (1/11/13), at 687; Arista User Manual v. 4.10.3 (10/22/12), at 601; Arista User Manual v. 4.9.3.2 (5/3/12), at 520; Arista User Manual v. 4.8.2 (11/18/11), at 394; Arista User Manual v. 4.7.3 (7/18/11), at 283.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display information about the MST configuration:</p> <pre>switch)# show spanning-tree mst configuration</pre> <pre>Name: [mst-bldg-sj6/3] Revision: 1 Instances Configured: 3 Instance Vlans mapped ----- 0 1 2000 2-2000 4094 2001-4094 -----</pre> <p>This example shows how to display the MD5 digest included in the current MST configuration:</p> <pre>switch)# show spanning-tree mst configuration digest</pre> <pre>Name [mst-config] Revision 10 Instances configured 25 Digest 0x40D5ECA178C657835C83B8CB16723192 Pre-std Digest 0x27BF112A75B72781ED928D9RC5BB4251</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2010), at L2-78</p>	<p>Examples</p> <ul style="list-style-type: none"> This command displays the MST region's VLAN-to-instance map. <pre>switch>show spanning-tree mst configuration</pre> <pre>Name [] Revision 0 Instances configured 3 Instance Vlans mapped ----- 0 1,4-4094 2 2 3 3 ----- switch></pre> <ul style="list-style-type: none"> This command displays the MST region's configuration digest. <pre>switch>show spanning-tree mst configuration digest</pre> <pre>Name [] Revision 0 Instances configured 1 Digest 0xAC36177F50283CD4B83821D8AB26DE62 switch></pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 991.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 869; Arista User Manual, v. 4.11.1 (1/11/13), at 687; Arista User Manual v. 4.10.3 (10/22/12), at 601; Arista User Manual v. 4.9.3.2 (5/3/12), at 520; Arista User Manual v. 4.8.2 (11/18/11), at 394; Arista User Manual v. 4.7.3 (7/18/11), at 283.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display information for the root bridge:</p> <pre>switch(config)# show spanning-tree root</pre> <pre>MST Instance Root ID Cost Time Age Dly Root Port ----- MST0000 32768 0018.bad7.fc15 0 2 20 15 This bridge is root</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 82-83.</p>	<p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 994.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 872; Arista User Manual, v. 4.11.1 (1/11/13), at 690; Arista User Manual v. 4.10.3 (10/22/12), at 604; Arista User Manual v. 4.9.3.2 (5/3/12), at 523; Arista User Manual v. 4.8.2 (11/18/11), at 397; Arista User Manual v. 4.7.3 (7/18/11), at 286.</p>

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<p>Examples This example shows how to display information for the root bridge:</p> <pre>switch(config)# show spanning-tree root</pre> <table><thead><tr><th>MST Instance</th><th>Root ID</th><th>Cost</th><th>Time</th><th>Age</th><th>Dly</th><th>Root Port</th></tr></thead><tbody><tr><td>MST0000</td><td>32768 0018.bad7.fc15</td><td>0</td><td>2</td><td>20</td><td>15</td><td>This bridge is root</td></tr></tbody></table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2010), at L2-79:L2-80</p>	MST Instance	Root ID	Cost	Time	Age	Dly	Root Port	MST0000	32768 0018.bad7.fc15	0	2	20	15	This bridge is root	<p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 994.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 872; Arista User Manual, v. 4.11.1 (1/11/13), at 690; Arista User Manual v. 4.10.3 (10/22/12), at 604; Arista User Manual v. 4.9.3.2 (5/3/12), at 523; Arista User Manual v. 4.8.2 (11/18/11), at 397; Arista User Manual v. 4.7.3 (7/18/11), at 286.</p>
MST Instance	Root ID	Cost	Time	Age	Dly	Root Port										
MST0000	32768 0018.bad7.fc15	0	2	20	15	This bridge is root										
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>This example shows how to display information about the number of VLANs configured on the device:</p> <pre>switch# show vlan summary</pre> <pre>Number of existing VLANs : 9 Number of existing user VLANs : 9 Number of existing extended VLANs : 0</pre> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 94.</p>	<p>Example</p> <ul style="list-style-type: none">This command displays the number of VLANs on the switch. <pre>switch>show vlan summary</pre> <pre>Number of existing VLANs : 18</pre> <pre>switch></pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 791.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 638; Arista User Manual, v. 4.11.1 (1/11/13), at 492; Arista User Manual v. 4.10.3 (10/22/12), at 410; Arista User Manual v. 4.9.3.2 (5/3/12), at 345.</p>														

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<div>Cisco NX-OS 5.0</div> <div>Effective date of registration: 11/13/2014</div>	<div>This example shows how to display information about the number of VLANs configured on the device:</div> <div>switch# show vlan summary</div> <div>Number of existing VLANs : 9</div> <div>Number of existing user VLANs : 9</div> <div>Number of existing extended VLANs : 0</div> <div>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-90</div>	<div>Example</div> <div><ul style="list-style-type: none">This command displays the number of VLANs on the switch.</div> <div>switch>show vlan summary</div> <div>Number of existing VLANs : 18</div> <div>switch></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 791.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 638; Arista User Manual, v. 4.11.1 (1/11/13), at 492; Arista User Manual v. 4.10.3 (10/22/12), at 410; Arista User Manual v. 4.9.3.2 (5/3/12), at 345.</div>																																
<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div>Examples</div> <div>This example shows how to display information about all private VLANs on the device:</div> <div>switch(config)# show vlan private-vlan</div> <table><thead><tr><th>Primary</th><th>Secondary</th><th>Type</th><th>Ports</th></tr></thead><tbody><tr><td>200</td><td>201</td><td>isolated</td><td>Eth2/26, Eth2/27</td></tr><tr><td>200</td><td>202</td><td>community</td><td>Eth2/26, Eth2/28</td></tr></tbody></table> <div>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 94.</div>	Primary	Secondary	Type	Ports	200	201	isolated	Eth2/26, Eth2/27	200	202	community	Eth2/26, Eth2/28	<div>Example</div> <div><ul style="list-style-type: none">This command displays the private VLANs.</div> <div>switch>show vlan private-vlan</div> <table><thead><tr><th>Primary</th><th>Secondary</th><th>Type</th><th>Ports</th></tr></thead><tbody><tr><td>5</td><td>25</td><td>isolated</td><td></td></tr><tr><td>5</td><td>26</td><td>isolated</td><td></td></tr><tr><td>7</td><td>31</td><td>community</td><td></td></tr><tr><td>7</td><td>32</td><td>isolated</td><td></td></tr></tbody></table> <div>switch></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 790.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 637; Arista User Manual, v. 4.11.1 (1/11/13), at 491; Arista User Manual v. 4.10.3 (10/22/12), at 409; Arista User Manual v. 4.9.3.2 (5/3/12), at 344.</div>	Primary	Secondary	Type	Ports	5	25	isolated		5	26	isolated		7	31	community		7	32	isolated	
Primary	Secondary	Type	Ports																															
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	Primary	Secondary	Type	Ports																														
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7	31	community																																
7	32	isolated																																
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>spanning-tree bpdupfilter</p> <p>To enable bridge protocol data unit (BPDU) Filtering on the interface, use the spanning-tree bpdupfilter command. To return to the default settings, use the no form of this command.</p> <pre>spanning-tree bpdupfilter {enable disable}</pre> <p>no spanning-tree bpdupfilter</p> <table><thead><tr><th>Syntax</th><th>Description</th></tr></thead><tbody><tr><td>enable</td><td>Enables BPDU Filtering on this interface.</td></tr><tr><td>disable</td><td>Disables BPDU Filtering on this interface.</td></tr></tbody></table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 111.</p>	Syntax	Description	enable	Enables BPDU Filtering on this interface.	disable	Disables BPDU Filtering on this interface.	<p>spanning-tree bpdupfilter</p> <p>The spanning-tree bpdupfilter command controls bridge protocol data unit (BPDU) filtering on the configuration mode interface. BPDU filtering is disabled by default.</p> <p>Ports with BPDU filtering enabled drop inbound BPDUs and do not send BPDUs. Enabling BPDU filtering on a port not connected to a host can result in loops as the port continues forwarding data while ignoring inbound BPDU packets.</p> <ul style="list-style-type: none">spanning-tree bpdupfilter enabled enables BPDU filtering.spanning-tree bpdupfilter disabled disables BPDU filtering by removing the spanning-tree bpdupfilter command from running-config. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 996.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 874; Arista User Manual, v. 4.11.1 (1/11/13), at 692; Arista User Manual v. 4.10.3 (10/22/12), at 606; Arista User Manual v. 4.9.3.2 (5/3/12), at 525; Arista User Manual v. 4.8.2 (11/18/11), at 399; Arista User Manual v. 4.7.3 (7/18/11), at 265.</p>																										
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disable	Disables BPDU Filtering on this interface.																																	

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>spanning-tree bridge assurance</p> <p>To enable Bridge Assurance on the device, use the spanning-tree bridge assurance command. To disable Bridge Assurance, use the no form of this command.</p> <p>spanning-tree bridge assurance</p> <p>no spanning-tree bridge assurance</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 115.</p>	<p>spanning-tree bridge assurance</p> <p>The spanning-tree bridge assurance command enables bridge assurance on all ports with a port type of <i>network</i>. Bridge assurance protects against unidirectional link failure, other software failure, and devices that quit running a spanning tree algorithm.</p> <p>Bridge assurance is available only on spanning tree <i>network</i> ports on point-to-point links. Both ends of the link must have bridge assurance enabled. If the device on one side of the link has bridge assurance enabled and the device on the other side either does not support bridge assurance or does not have it enabled, the bridge assurance enabled port is blocked.</p> <p>The no spanning-tree bridge assurance command disables bridge assurance.</p> <p>The spanning-tree bridge assurance and default spanning-tree bridge assurance commands restore the default behavior by removing the no spanning-tree bridge assurance command from <i>running-config</i>. Only the no form of this command is visible in <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>spanning-tree bridge assurance no spanning-tree bridge assurance default spanning-tree bridge assurance</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 967.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 880; Arista User Manual, v. 4.11.1 (1/11/13), at 698; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 531; Arista User Manual v. 4.8.2 (11/18/11), at 403; Arista User Manual v. 4.7.3 (7/18/11), at 252.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>spanning-tree bridge assurance</p> <p>To enable Bridge Assurance on the device, use the spanning-tree bridge assurance command. To disable Bridge Assurance, use the no form of this command.</p> <p>spanning-tree bridge assurance</p> <p>no spanning-tree bridge assurance</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-106.</p>	<p>spanning-tree bridge assurance</p> <p>The spanning-tree bridge assurance command enables bridge assurance on all ports with a port type of <i>network</i>. Bridge assurance protects against unidirectional link failure, other software failure, and devices that quit running a spanning tree algorithm.</p> <p>Bridge assurance is available only on spanning tree <i>network</i> ports on point-to-point links. Both ends of the link must have bridge assurance enabled. If the device on one side of the link has bridge assurance enabled and the device on the other side either does not support bridge assurance or does not have it enabled, the bridge assurance enabled port is blocked.</p> <p>The no spanning-tree bridge assurance command disables bridge assurance.</p> <p>The spanning-tree bridge assurance and default spanning-tree bridge assurance commands restore the default behavior by removing the no spanning-tree bridge assurance command from <i>running-config</i>. Only the no form of this command is visible in <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>spanning-tree bridge assurance no spanning-tree bridge assurance default spanning-tree bridge assurance</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 967.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 880; Arista User Manual, v. 4.11.1 (1/11/13), at 698; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 531; Arista User Manual v. 4.8.2 (11/18/11), at 403; Arista User Manual v. 4.7.3 (7/18/11), at 252.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>spanning-tree bridge assurance</p> <p>To enable Bridge Assurance on the device, use the spanning-tree bridge assurance command. To disable Bridge Assurance, use the no form of this command.</p> <p>spanning-tree bridge assurance</p> <p>no spanning-tree bridge assurance</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 4.x (2008), at L2-33.</p>	<p>spanning-tree bridge assurance</p> <p>The spanning-tree bridge assurance command enables bridge assurance on all ports with a port type of <i>network</i>. Bridge assurance protects against unidirectional link failure, other software failure, and devices that quit running a spanning tree algorithm.</p> <p>Bridge assurance is available only on spanning tree <i>network</i> ports on point-to-point links. Both ends of the link must have bridge assurance enabled. If the device on one side of the link has bridge assurance enabled and the device on the other side either does not support bridge assurance or does not have it enabled, the bridge assurance enabled port is blocked.</p> <p>The no spanning-tree bridge assurance command disables bridge assurance.</p> <p>The spanning-tree bridge assurance and default spanning-tree bridge assurance commands restore the default behavior by removing the no spanning-tree bridge assurance command from <i>running-config</i>. Only the no form of this command is visible in <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>spanning-tree bridge assurance no spanning-tree bridge assurance default spanning-tree bridge assurance</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 967.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 880; Arista User Manual, v. 4.11.1 (1/11/13), at 698; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 531; Arista User Manual v. 4.8.2 (11/18/11), at 403; Arista User Manual v. 4.7.3 (7/18/11), at 252.</p>

Copyright Registration Information	Cisco	Arista										
<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>spanning-tree guard</div><div>To enable or disable Loop Guard or Root Guard, use the spanning-tree guard command. To return to the default settings, use the no form of this command.</div><div><div>spanning-tree guard {loop root none}</div><div>no spanning-tree guard</div></div><div><div>Syntax Description</div><table><tr><td>loop</td><td>Enables Loop Guard on the interface.</td></tr><tr><td>root</td><td>Enables Root Guard on the interface.</td></tr><tr><td>none</td><td>Sets the guard mode to none.</td></tr></table></div><div><div>Defaults</div><div>Disabled</div></div><div><div>Command Modes</div><div>Interface configuration</div></div><div><div>SupportedUserRoles</div><div>network-admin vdc-admin</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>You cannot enable Loop Guard if Root Guard is enabled, although the device accepts the command to enable Loop Guard on spanning tree edge ports. This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to enable Root Guard: <div>switch(config-if)# spanning-tree guard root</div><div>switch(config-if)#</div></div></div><div>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, (2013), at 119.</div></div>	loop	Enables Loop Guard on the interface.	root	Enables Root Guard on the interface.	none	Sets the guard mode to none.	Release	Modification	4.0	This command was introduced.	<div><div>spanning-tree guard</div><div>The spanning-tree guard command enables root guard or loop guard on the configuration mode interface. The spanning-tree loopguard default command configures the global loop guard setting.</div><div><ul style="list-style-type: none">Root guard prevents a port from becoming a root or blocked port. A root guard port that receives a superior BPDU transitions to the root-inconsistent (blocked) state.Loop guard protects against loops resulting from unidirectional link failures on point-to-point links by preventing non-designated ports from becoming designated ports. When loop guard is enabled, a root or blocked port transitions to loop-inconsistent (blocked) state if it stops receiving BPDUs from its designated port. The port returns to its prior state when it receives a BPDU.</div><div>The no spanning-tree guard and default spanning-tree guard commands sets the configuration mode interface to the global loop guard mode by removing the spanning-tree guard statement from running-config. The spanning-tree guard none command disables loop guard and root guard on the interface, overriding the global setting.</div><div><div>Platform</div><div>all</div><div>Command Mode</div><div>Interface-Ethernet Configuration Interface-Port-Channel Configuration</div></div><div><div>Command Syntax</div><div><div>spanning-tree guard PORT_MODE</div><div>no spanning-tree guard</div><div>default spanning-tree guard</div></div></div><div><div>Parameters</div><div><ul style="list-style-type: none">PORT_MODE the port mode. Options include:<ul style="list-style-type: none">loop enables loop guard on the interface.root enables root guard on the interface.none disables root guard and loop guard.</div></div><div><div>Examples</div><div><ul style="list-style-type: none">This command enables root guard on Ethernet 5 interface.<div><div>switch(config)#interface ethernet 5</div><div>switch(config-if-Et5)#spanning-tree guard root</div><div>switch(config-if-Et5)#</div></div></div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1005.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 883; Arista User Manual, v. 4.11.1 (1/11/13), at 701; Arista User Manual v. 4.10.3 (10/22/12), at 615; Arista User Manual v. 4.9.3.2 (5/3/12), at 534; Arista User Manual v. 4.8.2 (11/18/11), at 406; Arista User Manual v. 4.7.3 (7/18/11), at 268.</div></div>
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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<div>spanning-tree guard</div> <p>To enable or disable Loop Guard or Root Guard, use the spanning-tree guard command. To return to the default settings, use the no form of this command.</p> <div>spanning-tree guard {loop root none}</div> <div>no spanning-tree guard</div> <table><tr><td>Syntax Description</td><td>loop</td><td>Enables Loop Guard on the interface.</td></tr><tr><td></td><td>root</td><td>Enables Root Guard on the interface.</td></tr><tr><td></td><td>none</td><td>Sets the guard mode to none.</td></tr></table> <table><tr><td>Defaults</td><td>Disabled</td></tr></table> <table><tr><td>Command Modes</td><td>Interface configuration</td></tr></table> <table><tr><td>SupportedUserRoles</td><td>network-admin vdc-admin</td></tr></table> <table><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>4.0</td><td>This command was introduced.</td></tr></table> <table><tr><td>Usage Guidelines</td><td colspan="2">You cannot enable Loop Guard if Root Guard is enabled, although the device accepts the command to enable Loop Guard on spanning tree edge ports. This command does not require a license.</td></tr></table> <table><tr><td>Examples</td><td colspan="2">This example shows how to enable Root Guard: switch(config-if)# spanning-tree guard root switch(config-if)#</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L-110.</p>	Syntax Description	loop	Enables Loop Guard on the interface.		root	Enables Root Guard on the interface.		none	Sets the guard mode to none.	Defaults	Disabled	Command Modes	Interface configuration	SupportedUserRoles	network-admin vdc-admin	Command History	Release	Modification		4.0	This command was introduced.	Usage Guidelines	You cannot enable Loop Guard if Root Guard is enabled, although the device accepts the command to enable Loop Guard on spanning tree edge ports. This command does not require a license.		Examples	This example shows how to enable Root Guard: switch(config-if)# spanning-tree guard root switch(config-if)#		<div>spanning-tree guard</div> <p>The spanning-tree guard command enables root guard or loop guard on the configuration mode interface. The spanning-tree loopguard default command configures the global loop guard setting.</p> <ul style="list-style-type: none">Root guard prevents a port from becoming a root or blocked port. A root guard port that receives a superior BPDU transitions to the root-inconsistent (blocked) state.Loop guard protects against loops resulting from unidirectional link failures on point-to-point links by preventing non-designated ports from becoming designated ports. When loop guard is enabled, a root or blocked port transitions to loop-inconsistent (blocked) state if it stops receiving BPDUs from its designated port. The port returns to its prior state when it receives a BPDU. <p>The no spanning-tree guard and default spanning-tree guard commands sets the configuration mode interface to the global loop guard mode by removing the spanning-tree guard statement from running-config. The spanning-tree guard none command disables loop guard and root guard on the interface, overriding the global setting.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Port-Channel Configuration</td></tr></table> <p>Command Syntax</p> <div>spanning-tree guard PORT_MODE</div> <div>no spanning-tree guard</div> <div>default spanning-tree guard</div> <p>Parameters</p> <ul style="list-style-type: none">PORT_MODE the port mode. Options include:<ul style="list-style-type: none">loop enables loop guard on the interface.root enables root guard on the interface.none disables root guard and loop guard. <p>Examples</p> <ul style="list-style-type: none">This command enables root guard on Ethernet 5 interface.<pre>switch(config)#interface ethernet 5 switch(config-if-Et5)#spanning-tree guard root switch(config-if-Et5)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1005.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 883; Arista User Manual, v. 4.11.1 (1/11/13), at 701; Arista User Manual v. 4.10.3 (10/22/12), at 615; Arista User Manual v. 4.9.3.2 (5/3/12), at 534; Arista User Manual v. 4.8.2 (11/18/11), at 406; Arista User Manual v. 4.7.3 (7/18/11), at 268.</p>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Port-Channel Configuration
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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<div><div>spanning-tree guard</div><div>To enable or disable Loop Guard or Root Guard, use the spanning-tree guard command. To return to the default settings, use the no form of this command.</div><div><div>spanning-tree guard {loop root none}</div><div>no spanning-tree guard</div></div><div><div>Syntax Description</div><table><tr><td>loop</td><td>Enables Loop Guard on the interface.</td></tr><tr><td>root</td><td>Enables Root Guard on the interface.</td></tr><tr><td>none</td><td>Sets the guard mode to none.</td></tr></table></div><div><div>Defaults</div><div>Disabled</div></div><div><div>Command Modes</div><div>Interface configuration</div></div><div><div>SupportedUserRoles</div><div>network-admin vdc-admin</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>You cannot enable Loop Guard if Root Guard is enabled, although the device accepts the command to enable Loop Guard on spanning tree edge ports. This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to enable Root Guard: <div>switch(config-if)# spanning-tree guard root switch(config-if)#</div></div></div><div>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 4.x (2008), at L-37.</div></div>	loop	Enables Loop Guard on the interface.	root	Enables Root Guard on the interface.	none	Sets the guard mode to none.	Release	Modification	4.0	This command was introduced.	<div><div>spanning-tree guard</div><div>The spanning-tree guard command enables root guard or loop guard on the configuration mode interface. The spanning-tree loopguard default command configures the global loop guard setting.</div><div><ul style="list-style-type: none">Root guard prevents a port from becoming a root or blocked port. A root guard port that receives a superior BPDU transitions to the root-inconsistent (blocked) state.Loop guard protects against loops resulting from unidirectional link failures on point-to-point links by preventing non-designated ports from becoming designated ports. When loop guard is enabled, a root or blocked port transitions to loop-inconsistent (blocked) state if it stops receiving BPDUs from its designated port. The port returns to its prior state when it receives a BPDU.</div><div>The no spanning-tree guard and default spanning-tree guard commands sets the configuration mode interface to the global loop guard mode by removing the spanning-tree guard statement from running-config. The spanning-tree guard none command disables loop guard and root guard on the interface, overriding the global setting.</div><div><div>Platformall</div><div>Command ModeInterface-Ethernet Configuration Interface-Port-Channel Configuration</div></div><div><div>Command Syntax</div><div><div>spanning-tree guard PORT_MODE</div><div>no spanning-tree guard</div><div>default spanning-tree guard</div></div></div><div><div>Parameters</div><div><ul style="list-style-type: none">PORT_MODE the port mode. Options include:<ul style="list-style-type: none">loop enables loop guard on the interface.root enables root guard on the interface.none disables root guard and loop guard.</div></div><div><div>Examples</div><div><ul style="list-style-type: none">This command enables root guard on Ethernet 5 interface.<div><div>switch(config)#interface ethernet 5</div><div>switch(config-if-Et5)#spanning-tree guard root</div><div>switch(config-if-Et5)#</div></div></div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1005.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 883; Arista User Manual, v. 4.11.1 (1/11/13), at 701; Arista User Manual v. 4.10.3 (10/22/12), at 615; Arista User Manual v. 4.9.3.2 (5/3/12), at 534; Arista User Manual v. 4.8.2 (11/18/11), at 406; Arista User Manual v. 4.7.3 (7/18/11), at 268.</div></div>
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>To enable Loop Guard as a default on all ports of a given bridge, use the spanning-tree loopguard default command. To disable Loop Guard, use the no form of this command.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, (2013), at 121.</p>	<ul style="list-style-type: none"> spanning-tree loopguard default command enables loop guard as a default on all switch ports. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 996.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 844; Arista User Manual, v. 4.11.1 (1/11/13), at 662; Arista User Manual v. 4.10.3 (10/22/12), 576; Arista User Manual v. 4.9.3.2 (5/3/12), at 496; Arista User Manual v. 4.8.2 (11/18/11), at 370; Arista User Manual v. 4.7.3 (7/18/11), at 255.</p>
Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<p>To enable Loop Guard as a default on all ports of a given bridge, use the spanning-tree loopguard default command. To disable Loop Guard, use the no form of this command.</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-112.</p>	<ul style="list-style-type: none"> spanning-tree loopguard default command enables loop guard as a default on all switch ports. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 996.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 844; Arista User Manual, v. 4.11.1 (1/11/13), at 662; Arista User Manual v. 4.10.3 (10/22/12), 576; Arista User Manual v. 4.9.3.2 (5/3/12), at 496; Arista User Manual v. 4.8.2 (11/18/11), at 370; Arista User Manual v. 4.7.3 (7/18/11), at 255.</p>
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>spanning-tree loopguard default</p> <p>To enable Loop Guard as a default on all ports of a given bridge, use the spanning-tree loopguard default command. To disable Loop Guard, use the no form of this command.</p> <p>spanning-tree loopguard default</p> <p>no spanning-tree loopguard default</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, (2013), at 121.</p>	<p>spanning-tree loopguard default</p> <p>The spanning-tree loopguard default command configures the global loop guard setting as <i>enabled</i>. Ports not covered by a spanning-tree guard command use the global loop guard setting. Loop guard prevents blocked or root ports from becoming a designated port due to failures resulting in a unidirectional link. The spanning-tree guard interface configuration statement overrides the global setting for a specified interface. The default global loop guard setting is <i>disabled</i>.</p> <p>The no spanning-tree loopguard default and default spanning-tree loopguard default commands restore the global loop guard setting of <i>disabled</i> by removing the spanning-tree loopguard default command from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>spanning-tree loopguard default no spanning-tree loopguard default default spanning-tree loopguard default</p> <p>Examples</p> <ul style="list-style-type: none"> This command enables loop guard as the default on all switch ports. <pre>switch(config)#spanning-tree loopguard default switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1008.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 886; Arista User Manual, v. 4.11.1 (1/11/13), at 704; Arista User Manual v. 4.10.3 (10/22/12), at 618; Arista User Manual v. 4.9.3.2 (5/3/12), at 537; Arista User Manual v. 4.8.2 (11/18/11), at 409; Arista User Manual v. 4.7.3 (7/18/11), at 255.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>spanning-tree loopguard default</p> <p>To enable Loop Guard as a default on all ports of a given bridge, use the spanning-tree loopguard default command. To disable Loop Guard, use the no form of this command.</p> <p>spanning-tree loopguard default</p> <p>no spanning-tree loopguard default</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-112.</p>	<p>spanning-tree loopguard default</p> <p>The spanning-tree loopguard default command configures the global loop guard setting as <i>enabled</i>. Ports not covered by a spanning-tree guard command use the global loop guard setting. Loop guard prevents blocked or root ports from becoming a designated port due to failures resulting in a unidirectional link. The spanning-tree guard interface configuration statement overrides the global setting for a specified interface. The default global loop guard setting is <i>disabled</i>.</p> <p>The no spanning-tree loopguard default and default spanning-tree loopguard default commands restore the global loop guard setting of <i>disabled</i> by removing the spanning-tree loopguard default command from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>spanning-tree loopguard default</p> <p>no spanning-tree loopguard default</p> <p>default spanning-tree loopguard default</p> <p>Examples</p> <ul style="list-style-type: none"> This command enables loop guard as the default on all switch ports. <pre>switch(config)#spanning-tree loopguard default switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1008.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 886; Arista User Manual, v. 4.11.1 (1/11/13), at 704; Arista User Manual v. 4.10.3 (10/22/12), at 618; Arista User Manual v. 4.9.3.2 (5/3/12), at 537; Arista User Manual v. 4.8.2 (11/18/11), at 409; Arista User Manual v. 4.7.3 (7/18/11), at 255.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>spanning-tree loopguard default</p> <p>To enable Loop Guard as a default on all ports of a given bridge, use the spanning-tree loopguard default command. To disable Loop Guard, use the no form of this command.</p> <p>spanning-tree loopguard default</p> <p>no spanning-tree loopguard default</p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 4.x (2008), at L2-39.</p>	<p>spanning-tree loopguard default</p> <p>The spanning-tree loopguard default command configures the global loop guard setting as <i>enabled</i>. Ports not covered by a spanning-tree guard command use the global loop guard setting. Loop guard prevents blocked or root ports from becoming a designated port due to failures resulting in a unidirectional link. The spanning-tree guard interface configuration statement overrides the global setting for a specified interface. The default global loop guard setting is <i>disabled</i>.</p> <p>The no spanning-tree loopguard default and default spanning-tree loopguard default commands restore the global loop guard setting of <i>disabled</i> by removing the spanning-tree loopguard default command from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>spanning-tree loopguard default</p> <p>no spanning-tree loopguard default</p> <p>default spanning-tree loopguard default</p> <p>Examples</p> <ul style="list-style-type: none"> This command enables loop guard as the default on all switch ports. <pre>switch(config)#spanning-tree loopguard default switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1008.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 886; Arista User Manual, v. 4.11.1 (1/11/13), at 704; Arista User Manual v. 4.10.3 (10/22/12), at 618; Arista User Manual v. 4.9.3.2 (5/3/12), at 537; Arista User Manual v. 4.8.2 (11/18/11), at 409; Arista User Manual v. 4.7.3 (7/18/11), at 255.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>spanning-tree mst configuration</p> <p>To enter the Multiple Spanning Tree (MST) configuration submode, use the <code>spanning-tree mst configuration</code> command. To return to the default settings, use the <code>no</code> form of this command.</p> <p><code>spanning-tree mst configuration</code></p> <p><code>no spanning-tree mst configuration</code></p> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, (2013), , at 124.</p>	<p>spanning-tree mst configuration</p> <p>The <code>spanning-tree mst configuration</code> command places the switch in MST-configuration mode, which is the group change mode where MST region parameters are configured.</p> <p>Changes made in a group change mode are saved by leaving the mode through the <code>exit</code> command or by entering another configuration mode. To discard changes from the current edit session, leave the mode with the <code>abort</code> command.</p> <p>These commands are available in MST-configuration mode:</p> <ul style="list-style-type: none"> • <code>abort (mst-configuration mode)</code> • <code>exit (mst-configuration mode)</code> • <code>instance</code> • <code>name (mst-configuration mode)</code> • <code>revision (mst-configuration mode)</code> • <code>show (mst-configuration mode)</code> <p>The <code>no spanning-tree mst configuration</code> and default <code>spanning-tree mst configuration</code> commands restore the MST default configuration.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p><code>spanning-tree mst configuration</code></p> <p><code>no spanning-tree mst configuration</code></p> <p><code>default spanning-tree mst configuration</code></p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1012.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 890; Arista User Manual, v. 4.11.1 (1/11/13), at 708; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 541; Arista User Manual v. 4.8.2 (11/18/11), at 413.</p>

Copyright Registration Information	Cisco	Arista				
Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<div>spanning-tree mst configuration</div> <p>To enter the Multiple Spanning Tree (MST) configuration submode, use the spanning-tree mst configuration command. To return to the default settings, use the no form of this command.</p> <div>spanning-tree mst configuration</div> <div>no spanning-tree mst configuration</div> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 5.x (2010), at L2-115.</p>	<div>spanning-tree mst configuration</div> <p>The spanning-tree mst configuration command places the switch in MST-configuration mode, which is the group change mode where MST region parameters are configured.</p> <p>Changes made in a group change mode are saved by leaving the mode through the exit command or by entering another configuration mode. To discard changes from the current edit session, leave the mode with the abort command.</p> <p>These commands are available in MST-configuration mode:</p> <ul style="list-style-type: none">• abort (mst-configuration mode)• exit (mst-configuration mode)• instance• name (mst-configuration mode)• revision (mst-configuration mode)• show (mst-configuration mode) <p>The no spanning-tree mst configuration and default spanning-tree mst configuration commands restore the MST default configuration.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Global Configuration</td></tr></table> <p>Command Syntax</p> <div>spanning-tree mst configuration</div> <div>no spanning-tree mst configuration</div> <div>default spanning-tree mst configuration</div> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1012.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 890; Arista User Manual, v. 4.11.1 (1/11/13), at 708; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 541; Arista User Manual v. 4.8.2 (11/18/11), at 413.</p>	Platform	all	Command Mode	Global Configuration
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Command Mode	Global Configuration					

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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<div>spanning-tree mst configuration</div> <p>To enter the Multiple Spanning Tree (MST) configuration submode, use the spanning-tree mst configuration command. To return to the default settings, use the no form of this command.</p> <div>spanning-tree mst configuration</div> <div>no spanning-tree mst configuration</div> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 4.x (2008), at L2-42.</p>	<div>spanning-tree mst configuration</div> <p>The spanning-tree mst configuration command places the switch in MST-configuration mode, which is the group change mode where MST region parameters are configured.</p> <p>Changes made in a group change mode are saved by leaving the mode through the exit command or by entering another configuration mode. To discard changes from the current edit session, leave the mode with the abort command.</p> <p>These commands are available in MST-configuration mode:</p> <ul style="list-style-type: none">• abort (mst-configuration mode)• exit (mst-configuration mode)• instance• name (mst-configuration mode)• revision (mst-configuration mode)• show (mst-configuration mode) <p>The no spanning-tree mst configuration and default spanning-tree mst configuration commands restore the MST default configuration.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Global Configuration</td></tr></table> <p>Command Syntax</p> <div>spanning-tree mst configuration</div> <div>no spanning-tree mst configuration</div> <div>default spanning-tree mst configuration</div> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1012.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 890; Arista User Manual, v. 4.11.1 (1/11/13), at 708; Arista User Manual v. 4.10.3 (10/22/12), at 612; Arista User Manual v. 4.9.3.2 (5/3/12), at 541; Arista User Manual v. 4.8.2 (11/18/11), at 413.</p>	Platform	all	Command Mode	Global Configuration
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td><code>instance vlan</code></td><td>Maps a VLAN or a set of VLANs to an MST instance.</td></tr> <tr> <td></td><td><code>name (mst configuration)</code></td><td>Sets the name of an MST region.</td></tr> <tr> <td></td><td><code>revision</code></td><td>Sets the revision number for the MST configuration.</td></tr> <tr> <td></td><td><code>show spanning-tree mst</code></td><td>Displays information about the MST protocol.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 125.</p>	Related Commands	Command	Description		<code>instance vlan</code>	Maps a VLAN or a set of VLANs to an MST instance.		<code>name (mst configuration)</code>	Sets the name of an MST region.		<code>revision</code>	Sets the revision number for the MST configuration.		<code>show spanning-tree mst</code>	Displays information about the MST protocol.	<p>The <code>instance</code> command inserts an entry into the VLAN-to-instance map that associates a set of VLANs to an MST instance. In addition to defining the MST topology, the VLAN-to-instance map is one of three parameters, along with the MST name and revision number, that identifies the switch's MST region.</p> <p>The <code>no instance</code> command removes specified entries from the VLAN-to-instance map. If the command does not provide a VLAN list, all entries are removed for the specified instance. The <code>no instance</code> and <code>default instance</code> commands function identically.</p> <p>Platform all Command Mode MST-Configuration</p> <p>Command Syntax</p> <pre>instance mst_inst vlans v_range no instance mst_inst [vlans v_range] no default instance mst_inst [vlans v_range]</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 978.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 856; Arista User Manual, v. 4.11.1 (1/11/13), at 674; Arista User Manual v. 4.10.3 (10/22/12), at 588; Arista User Manual v. 4.9.3.2 (5/3/12), at 507; Arista User Manual v. 4.8.2 (11/18/11), at 381; Arista User Manual v. 4.7.3 (7/18/11), at 293.</p>
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	<code>show spanning-tree mst</code>	Displays information about the MST protocol.															

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	<code>show spanning-tree mst</code>	Displays information about the MST protocol.															

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	<code>show spanning-tree mst</code>	Displays information about the MST protocol.															





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	<code>revision</code>	Sets the revision number for the MST configuration.															
	<code>show spanning-tree mst</code>	Displays information about the MST protocol.															



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<p>Cisco IOS XE 2.1</p> <p>Effective date of registration: 11/24/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td><code>instance vlan</code></td><td>Maps a VLAN or a set of VLANs to an MST instance.</td></tr> <tr> <td></td><td><code>name (mst configuration)</code></td><td>Sets the name of an MST region.</td></tr> <tr> <td></td><td><code>revision</code></td><td>Sets the revision number for the MST configuration.</td></tr> <tr> <td></td><td><code>show spanning-tree mst</code></td><td>Displays information about the MST protocol.</td></tr> </tbody> </table> <p>Cisco IOS Configuration Fundamentals Command Reference (2008), at CF-466:CF467.</p>	Related Commands	Command	Description		<code>instance vlan</code>	Maps a VLAN or a set of VLANs to an MST instance.		<code>name (mst configuration)</code>	Sets the name of an MST region.		<code>revision</code>	Sets the revision number for the MST configuration.		<code>show spanning-tree mst</code>	Displays information about the MST protocol.	<p>The <code>instance</code> command inserts an entry into the VLAN-to-instance map that associates a set of VLANs to an MST instance. In addition to defining the MST topology, the VLAN-to-instance map is one of three parameters, along with the MST name and revision number, that identifies the switch's MST region.</p> <p>The <code>no instance</code> command removes specified entries from the VLAN-to-instance map. If the command does not provide a VLAN list, all entries are removed for the specified instance. The <code>no instance</code> and <code>default instance</code> commands function identically.</p> <p>Platform all Command Mode MST-Configuration</p> <p>Command Syntax</p> <pre>instance mst_inst vlans v_range no instance mst_inst [vlans v_range] no default instance mst_inst [vlans v_range]</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 978.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 856; Arista User Manual, v. 4.11.1 (1/11/13), at 674; Arista User Manual v. 4.10.3 (10/22/12), at 588; Arista User Manual v. 4.9.3.2 (5/3/12), at 507; Arista User Manual v. 4.8.2 (11/18/11), at 381; Arista User Manual v. 4.7.3 (7/18/11), at 293.</p>
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Related Commands</th><th>Command</th><th>Description</th></tr><tr><td></td><td>show spanning-tree summary</td><td>Displays information about the spanning tree configuration.</td></tr><tr><td></td><td>spanning-tree bpduguard</td><td>Enables BPDU Guard on the interface.</td></tr><tr><td></td><td>spanning-tree port type edge</td><td>Configures an interface as a spanning tree edge port.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 148.</p>	Related Commands	Command	Description		show spanning-tree summary	Displays information about the spanning tree configuration.		spanning-tree bpduguard	Enables BPDU Guard on the interface.		spanning-tree port type edge	Configures an interface as a spanning tree edge port.	<p>spanning-tree bpduguard</p> <p>The spanning-tree bpduguard command controls BPDU guard on the configuration mode interface. A BPDU guard-enabled port is disabled when it receives a BPDU packet. Disabled ports differ from blocked ports in that they are re-enabled only through manual intervention.</p> <p>The BPDU guard default setting for portfast ports is configured by the spanning-tree portfast bpduguard default command; BPDU guard is disabled by default on all non-portfast ports.</p> <ul style="list-style-type: none">• spanning-tree bpduguard enable enables BPDU guard on the interface.• spanning-tree bpduguard disable disables BPDU guard on the interface. <p>The no spanning-tree bpduguard and default spanning-tree bpduguard commands restore the global BPDU guard setting on the configuration mode interface by removing the corresponding spanning-tree bpduguard command from <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Port-Channel Configuration</td></tr></table> <p>Command Syntax</p> <pre>spanning-tree bpduguard <i>GUARD_ACTION</i> no spanning-tree bpduguard default spanning-tree bpduguard</pre> <p>Parameters</p> <ul style="list-style-type: none">• <i>GUARD_ACTION</i> BPDU guard setting. Options include:<ul style="list-style-type: none">— enabled BPDU guard is enabled on the interface.— disabled BPDU guard is disabled on the interface. <p>Examples</p> <ul style="list-style-type: none">• These commands enable BPDU guard on Ethernet interface 5.<pre>switch(config)#interface ethernet 5 switch(config-if-Et5)#spanning-tree bpduguard enabled switch(config-if-Et5)</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 997.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 875; Arista User Manual, v. 4.11.1 (1/11/13), at 693; Arista User Manual v. 4.10.3 (10/22/12), at 607; Arista User Manual v. 4.9.3.2 (5/3/12), at 526; Arista User Manual v. 4.8.2 (11/18/11), at 400; Arista User Manual v. 4.7.3 (7/18/11), at 266.</p>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Port-Channel Configuration
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Effective date of registration: 11/13/2014	<p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 4.x (2008), at L2-65.</p>	<p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 997.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 875; Arista User Manual, v. 4.11.1 (1/11/13), at 693; Arista User Manual v. 4.10.3 (10/22/12), at 607; Arista User Manual v. 4.9.3.2 (5/3/12), at 526; Arista User Manual v. 4.8.2 (11/18/11), at 400; Arista User Manual v. 4.7.3 (7/18/11), at 266.</p>																

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<div data-bbox="310 280 1134 535">  Caution When disabling spanning tree on a VLAN using the <code>no spanning-tree vlan <i>vlan-id</i></code> command, ensure that all switches and bridges in the VLAN have spanning tree disabled. You cannot disable spanning tree on some switches and bridges in a VLAN and leave it enabled on other switches and bridges in the same VLAN because switches and bridges with spanning tree enabled have incomplete information about the physical topology of the network. </div> <div data-bbox="310 438 1134 535">  Caution We do not recommend disabling spanning tree even in a topology that is free of physical loops. Spanning tree is a safeguard against misconfigurations and cabling errors. Do not disable spanning tree in a VLAN without ensuring that there are no physical loops present in the VLAN. </div> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference (2013), at 159.</p>	<div data-bbox="1182 280 2032 354"> Warning Disabling spanning tree is not recommended, even in topologies free of physical loops. Spanning tree guards against configuration mistakes and cabling errors. When disabling VLAN, ensure that there are no physical loops in the VLAN. </div> <div data-bbox="1182 386 2032 475"> Important When disabling spanning tree on a VLAN, ensure that all switches and bridges in the network disable spanning tree for the same VLAN. Disabling spanning tree on a subset of switches and bridges in a VLAN may have unexpected results because switches and bridges running spanning tree will have incomplete information regarding the network's physical topology. </div> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1023.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 901; Arista User Manual, v. 4.11.1 (1/11/13), at 719; Arista User Manual v. 4.10.3 (10/22/12), at 633; Arista User Manual v. 4.9.3.2 (5/3/12), at 550; Arista User Manual v. 4.8.2 (11/18/11), at 422; Arista User Manual v. 4.7.3 (7/18/11), at 264.</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<div data-bbox="310 792 1134 930">  Caution When disabling spanning tree on a VLAN using the <code>no spanning-tree vlan <i>vlan-id</i></code> command, ensure that all switches and bridges in the VLAN have spanning tree disabled. You cannot disable spanning tree on some switches and bridges in a VLAN and leave it enabled on other switches and bridges in the same VLAN because switches and bridges with spanning tree enabled have incomplete information about the physical topology of the network. </div> <div data-bbox="310 946 1134 1044">  Caution We do not recommend disabling spanning tree even in a topology that is free of physical loops. Spanning tree is a safeguard against misconfigurations and cabling errors. Do not disable spanning tree in a VLAN without ensuring that there are no physical loops present in the VLAN. </div> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 5.x (2010), at L2-150.</p>	<div data-bbox="1182 792 2032 865"> Warning Disabling spanning tree is not recommended, even in topologies free of physical loops. Spanning tree guards against configuration mistakes and cabling errors. When disabling VLAN, ensure that there are no physical loops in the VLAN. </div> <div data-bbox="1182 898 2032 987"> Important When disabling spanning tree on a VLAN, ensure that all switches and bridges in the network disable spanning tree for the same VLAN. Disabling spanning tree on a subset of switches and bridges in a VLAN may have unexpected results because switches and bridges running spanning tree will have incomplete information regarding the network's physical topology. </div> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1023.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 901; Arista User Manual, v. 4.11.1 (1/11/13), at 719; Arista User Manual v. 4.10.3 (10/22/12), at 633; Arista User Manual v. 4.9.3.2 (5/3/12), at 550; Arista User Manual v. 4.8.2 (11/18/11), at 422; Arista User Manual v. 4.7.3 (7/18/11), at 264.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<div data-bbox="310 280 1129 415">  <p>Caution When disabling spanning tree on a VLAN using the <code>no spanning-tree vlan <i>vlan-id</i></code> command, ensure that all switches and bridges in the VLAN have spanning tree disabled. You cannot disable spanning tree on some switches and bridges in a VLAN and leave it enabled on other switches and bridges in the same VLAN because switches and bridges with spanning tree enabled have incomplete information about the physical topology of the network.</p> </div> <div data-bbox="310 435 1129 532">  <p>Caution We do not recommend disabling spanning tree even in a topology that is free of physical loops. Spanning tree is a safeguard against misconfigurations and cabling errors. Do not disable spanning tree in a VLAN without ensuring that there are no physical loops present in the VLAN.</p> </div> <p>Cisco Nexus 7000 Series NX-OS Layer 2 Switching Command Reference, Release 4.x (2008), at L2-75.</p>	<div data-bbox="1182 280 2032 354"> <p>Warning Disabling spanning tree is not recommended, even in topologies free of physical loops. Spanning tree guards against configuration mistakes and cabling errors. When disabling VLAN, ensure that there are no physical loops in the VLAN.</p> </div> <div data-bbox="1182 386 2032 475"> <p>Important When disabling spanning tree on a VLAN, ensure that all switches and bridges in the network disable spanning tree for the same VLAN. Disabling spanning tree on a subset of switches and bridges in a VLAN may have unexpected results because switches and bridges running spanning tree will have incomplete information regarding the network's physical topology.</p> </div> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1023.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 901; Arista User Manual, v. 4.11.1 (1/11/13), at 719; Arista User Manual v. 4.10.3 (10/22/12), at 633; Arista User Manual v. 4.9.3.2 (5/3/12), at 550; Arista User Manual v. 4.8.2 (11/18/11), at 422; Arista User Manual v. 4.7.3 (7/18/11), at 264.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>switchport private-vlan trunk native vlan</p> <p>To set the native VLAN for private VLAN promiscuous and isolated trunk ports, use the switchport private-vlan trunk native vlan command. To return to the default value, use the no form of this command.</p> <p>switchport private-vlan trunk native vlan <i>vlan-id</i></p> <p>no switchport private-vlan trunk native vlan <i>vlan-id</i></p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 5.x (2010), 177.</p>	<p>switchport trunk native vlan</p> <p>The switchport trunk native vlan command specifies the trunk mode native VLAN for the configuration mode interface. Interfaces in trunk mode associate untagged frames with the native VLAN. Trunk mode interfaces can also be configured to drop untagged frames. The default native VLAN for all interfaces is VLAN 1.</p> <p>The no switchport trunk native vlan and default switchport trunk native vlan commands restore VLAN 1 as the trunk mode native VLAN to the configuration mode interface by removing the corresponding switchport trunk native vlan command from <i>running-config</i>.</p> <p>Platform all Command Mode Interface-Ethernet Configuration Interface-Port-channel Configuration</p> <p>Command Syntax</p> <p>switchport trunk native vlan <i>VLAN_ID</i> no switchport trunk native vlan default switchport trunk native vlan</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 800.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 647; Arista User Manual, v. 4.11.1 (1/11/13), at 500; Arista User Manual v. 4.10.3 (10/22/12), at 418; Arista User Manual v. 4.9.3.2 (5/3/12), at 357.</p>

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>area stub (OSPF)</div><div>To define an area as an Open Shortest Path First (OSPF) stub area, use the <code>area stub</code> command. To remove the area, use the <code>no</code> form of this command.</div><div><div>area <i>area-id</i> stub [no-summary]</div><div>no area <i>area-id</i> stub [no-summary]</div></div><div><table><tr><th>Syntax</th><th>Description</th></tr><tr><td><i>area-id</i></td><td>Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.</td></tr><tr><td>no-summary</td><td>(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.</td></tr></table></div><div>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 42.</div></div>	Syntax	Description	<i>area-id</i>	Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.	no-summary	(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.	<div><div>no area (OSPFv3)</div><div>The <code>no area</code> command removes all area configuration commands for the specified OSPFv3 area. Commands removed by the <code>no area</code> command include:</div><div><ul style="list-style-type: none">• area• nssa• range• stub</div><div>Area settings can be removed individually; refer to the command description page of the desired command for details.</div><div><div>Platformall</div><div>Command ModeRouter-OSPF3 Configuration</div></div><div><div>Command Syntax</div><div>no area <i>area_id</i> [TYPE]</div><div>default area <i>area_id</i> [TYPE]</div></div><div><div>Parameters</div><div><ul style="list-style-type: none">• <i>area_id</i> area number.<div>Valid formats: integer <1 to 4294967295> or dotted decimal <0.0.0.1 to 255.255.255.255> Area 0 (or 0.0.0.0) is not configurable; it is always <i>normal</i>. <i>Running-config</i> stores value in dotted decimal notation.</div></div><div><ul style="list-style-type: none">• <i>TYPE</i> area type. Values include:<ul style="list-style-type: none">— nssa— nssa translate type7 always sets p-bit when sending type 7 LSAs— stub— stub no-summary Prevents ABRs from sending summary link advertisements into the area.</div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/24/2014), at 1521.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1305; Arista User Manual, v. 4.11.1 (1/11/13), at 1056; Arista User Manual v. 4.10.3 (10/22/12), at 781.</div></div>
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no-summary	(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.							

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<p>area stub (OSPF)</p> <p>To define an area as an Open Shortest Path First (OSPF) stub area, use the <code>area stub</code> command. To remove the area, use the <code>no</code> form of this command.</p> <pre>area area-id stub [no-summary] no area area-id stub [no-summary]</pre> <table><tr><th>Syntax</th><th>Description</th></tr><tr><td><code>area-id</code></td><td>Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.</td></tr><tr><td><code>no-summary</code></td><td>(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 5.x (2010), at L3-34.</p>	Syntax	Description	<code>area-id</code>	Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.	<code>no-summary</code>	(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.	<p>no area (OSPFv3)</p> <p>The <code>no area</code> command removes all area configuration commands for the specified OSPFv3 area. Commands removed by the <code>no area</code> command include:</p> <ul style="list-style-type: none">• <code>area</code>• <code>nssa</code>• <code>range</code>• <code>stub</code> <p>Area settings can be removed individually; refer to the command description page of the desired command for details.</p> <p>Platform all Command Mode Router-OSPF3 Configuration</p> <p>Command Syntax</p> <pre>no area area_id [TYPE] default area area_id [TYPE]</pre> <p>Parameters</p> <ul style="list-style-type: none">• <code>area_id</code> area number. Valid formats: integer <1 to 4294967295> or dotted decimal <0.0.0.1 to 255.255.255.255> Area 0 (or 0.0.0.0) is not configurable; it is always <i>normal</i>. <i>Running-config</i> stores value in dotted decimal notation.• <code>TYPE</code> area type. Values include:<ul style="list-style-type: none">— <code>nssa</code>— <code>nssa translate type7 always</code> sets p-bit when sending type 7 LSAs— <code>stub</code>— <code>stub no-summary</code> Prevents ABRs from sending summary link advertisements into the area. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/24/2014), at 1521.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1305; Arista User Manual, v. 4.11.1 (1/11/13), at 1056; Arista User Manual v. 4.10.3 (10/22/12), at 781.</p>
	Syntax	Description						
	<code>area-id</code>	Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.						
<code>no-summary</code>	(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.							

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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<p>area stub (OSPF)</p> <p>To define an area as an Open Shortest Path First (OSPF) stub area, use the <code>area stub</code> command. To remove the area, use the <code>no</code> form of this command.</p> <pre>area area-id stub [no-summary] no area area-id stub [no-summary]</pre> <table><tr><th>Syntax</th><th>Description</th></tr><tr><td>area-id</td><td>Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.</td></tr><tr><td>no-summary</td><td>(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 4.x (2008), at L3-32.</p>	Syntax	Description	area-id	Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.	no-summary	(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.	<p>no area (OSPFv3)</p> <p>The <code>no area</code> command removes all area configuration commands for the specified OSPFv3 area. Commands removed by the <code>no area</code> command include:</p> <ul style="list-style-type: none">• area• nssa• range• stub <p>Area settings can be removed individually; refer to the command description page of the desired command for details.</p> <p>Platform all Command Mode Router-OSPF3 Configuration</p> <p>Command Syntax</p> <pre>no area area_id [TYPE] default area area_id [TYPE]</pre> <p>Parameters</p> <ul style="list-style-type: none">• area_id area number. Valid formats: integer <1 to 4294967295> or dotted decimal <0.0.0.1 to 255.255.255.255> Area 0 (or 0.0.0.0) is not configurable; it is always <i>normal</i>. Running-config stores value in dotted decimal notation.• TYPE area type. Values include:<ul style="list-style-type: none">— nssa— nssa translate type7 always sets p-bit when sending type 7 LSAs— stub— stub no-summary Prevents ABRs from sending summary link advertisements into the area. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/24/2014), at 1521.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1305; Arista User Manual, v. 4.11.1 (1/11/13), at 1056; Arista User Manual v. 4.10.3 (10/22/12), at 781.</p>
	Syntax	Description						
	area-id	Identifier for the OSPF stub area. Specify as either a positive integer value or an IP address.						
no-summary	(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area.							

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>This example shows how to clear all OSPF neighbor details for all OSPF instances:</p> <pre>switch# clear ip ospf neighbor *</pre> <p>This example shows how to clear all OSPF neighbor details for all neighbors on Ethernet interface 1/2 for OSPF instance 202:</p> <pre>switch# clear ip ospf 202 neighbor ethernet 1/2</pre> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 112.</p>	<p>Examples</p> <ul style="list-style-type: none">This command resets all OSPF neighbor statistics. <pre>switch#clear ip ospf neighbor * switch#</pre> <ul style="list-style-type: none">This command resets the OSPF neighbor statistics for the specified Ethernet 3 interface. <pre>switch#clear ip ospf neighbor ethernet 3 switch##</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1420.</p>						
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>default-information originate (OSPF)</p> <p>To generate a default external route into an Open Shortest Path First (OSPF) routing domain, use the default-information originate command. To disable this feature, use the no form of this command.</p> <pre>default-information originate [always] [route-map map-name] no default-information originate [always] [route-map map-name]</pre> <table><tr><th>Syntax</th><th>Description</th></tr><tr><td>always</td><td>(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.</td></tr><tr><td>route-map map-name</td><td>(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 42.</p>	Syntax	Description	always	(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.	route-map map-name	(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.	<p>Examples</p> <ul style="list-style-type: none">These commands will always advertise the OSPFv2 default route regardless of whether the switch has a default route configured. <pre>switch(config)#router ospf 1 switch((config-router-ospf)#default-information originate always switch(config-router-ospf)#show active router ospf 1 default-information originate always</pre> <ul style="list-style-type: none">These commands advertise a default route with a metric of 100 and an external metric type of 1 if a default route is configured. <pre>switch(config)#router ospf 1 switch((config-router-ospf)#default-information originate metric 100 metric-type 1</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1423.</p>
Syntax	Description							
always	(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.							
route-map map-name	(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.							

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<h3>default-information originate (OSPFv3)</h3> <p>To generate a default external route into an Open Shortest Path First version 3 (OSPFv3) routing domain, use the <code>default-information originate</code> command. To disable this feature, use the <code>no</code> form of this command.</p> <pre>default-information originate [always] [route-map map-name] no default-information originate [always] [route-map map-name]</pre> <table><tr><th>Syntax Description</th><td><code>always</code></td><td>(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.</td></tr><tr><td></td><td><code>route-map map-name</code></td><td>(Optional) Specifies to advertise the default route if the route map is satisfied. The <code>map-name</code> argument can be any alphanumeric string up to 63 characters.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 44.</p>	Syntax Description	<code>always</code>	(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.		<code>route-map map-name</code>	(Optional) Specifies to advertise the default route if the route map is satisfied. The <code>map-name</code> argument can be any alphanumeric string up to 63 characters.	<h3>Examples</h3> <ul style="list-style-type: none">These commands will always advertise the OSPFv3 default route regardless of whether the switch has a default route configured.<pre>switch(config)#ipv6 router ospf 1 switch(config-router-ospf3)#default-information originate always switch(config-router-ospf3)#show active ipv6 router ospf 1 default-information originate always</pre>These commands configures OSPF area 1 as metric of 100 for the default route with an external metric type of Type 1.<pre>switch(config)#ipv6 router ospf 1 switch(config-router-ospf3)#default-information originate metric 100 metric-type 1 switch(config-router-ospf3)#show active ipv6 router ospf 1 default-information originate metric 100 metric-type 1 switch(config-router-ospf3)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1506.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1291; Arista User Manual, v. 4.11.1 (1/11/13), at 1041.</p>
	Syntax Description	<code>always</code>	(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.					
		<code>route-map map-name</code>	(Optional) Specifies to advertise the default route if the route map is satisfied. The <code>map-name</code> argument can be any alphanumeric string up to 63 characters.					

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<div>default-information originate (OSPFv3)</div> <div>To generate a default external route into an Open Shortest Path First version 3 (OSPFv3) routing domain, use the default-information originate command. To disable this feature, use the no form of this command.</div> <div>default-information originate [always] [route-map map-name]</div> <div>no default-information originate [always] [route-map map-name]</div> <div><table><tr><td>Syntax Description</td><td>always</td><td>(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.</td></tr><tr><td></td><td>route-map map-name</td><td>(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.</td></tr></table></div>	Syntax Description	always	(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.		route-map map-name	(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.	<div>Examples</div> <div><ul style="list-style-type: none">These commands will always advertise the OSPFv3 default route regardless of whether the switch has a default route configured.<div>switch(config)#ipv6 router ospf 1</div><div>switch(config-router-ospf3)#default-information originate always</div><div>switch(config-router-ospf3)#show active</div><div>ipv6 router ospf 1</div><div>default-information originate always</div>These commands configures OSPF area 1 as metric of 100 for the default route with an external metric type of Type 1.<div>switch(config)#ipv6 router ospf 1</div><div>switch(config-router-ospf3)#default-information originate metric 100 metric-type 1</div><div>switch(config-router-ospf3)#show active</div><div>ipv6 router ospf 1</div><div>default-information originate metric 100 metric-type 1</div><div>switch(config-router-ospf3)#</div></div>
	Syntax Description	always	(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.					
	route-map map-name	(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.						
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1506. See also Arista User Manual v. 4.12.3 (7/17/13), at 1291; Arista User Manual, v. 4.11.1 (1/11/13), at 1041.								

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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<div>default-information originate (OSPFv3)</div> <div>To generate a default external route into an Open Shortest Path First version 3 (OSPFv3) routing domain, use the default-information originate command. To disable this feature, use the no form of this command.</div> <div>default-information originate [always] [route-map map-name]</div> <div>no default-information originate [always] [route-map map-name]</div> <div><table><tr><td>Syntax Description</td><td>always</td><td>(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.</td></tr><tr><td></td><td>route-map map-name</td><td>(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.</td></tr></table></div>	Syntax Description	always	(Optional) Specifies to always advertise the default route regardless of whether the route table has a default route.		route-map map-name	(Optional) Specifies to advertise the default route if the route map is satisfied. The map-name argument can be any alphanumeric string up to 63 characters.	<div>Examples</div> <div><ul style="list-style-type: none">These commands will always advertise the OSPFv3 default route regardless of whether the switch has a default route configured.<div>switch(config)#ipv6 router ospf 1</div><div>switch(config-router-ospf3)#default-information originate always</div><div>switch(config-router-ospf3)#show active</div><div>ipv6 router ospf 1</div><div>default-information originate always</div>These commands configures OSPF area 1 as metric of 100 for the default route with an external metric type of Type 1.<div>switch(config)#ipv6 router ospf 1</div><div>switch(config-router-ospf3)#default-information originate metric 100 metric-type 1</div><div>switch(config-router-ospf3)#show active</div><div>ipv6 router ospf 1</div><div>default-information originate metric 100 metric-type 1</div><div>switch(config-router-ospf3)#</div></div>
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>distance (EIGRP)</p> <p>To allow the use of two administrative distances—internal and external—for the Enhanced Interior Gateway Routing Protocol (EIGRP) that could provide a better route to a node, use the <code>distance</code> command. To reset to default, use the <code>no distance</code> command.</p> <p><code>distance</code> <i>internal-distance external-distance</i></p> <p><code>no distance</code></p> <table border="1"> <tr> <td>Syntax Description</td><td><i>internal-distance</i></td><td>Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.</td></tr> <tr> <td></td><td><i>external-distance</i></td><td>Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.</td></tr> </table> <p>Defaults</p> <p><i>internal-distance</i>: 90 <i>external-distance</i>: 170</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 61.</p>	Syntax Description	<i>internal-distance</i>	Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.		<i>external-distance</i>	Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.	<p>distance bgp</p> <p>The <code>distance bgp</code> command assigns an administrative distance to routes that the switch learns through BGP. Routers use administrative distances to select a route when two protocols provide routing information to the same destination. Distance values range from 1 to 255; lower distance values correspond to higher reliability. BGP routing tables do not include routes with a distance of 255.</p> <p>The <code>distance</code> command assigns distance values to external, internal, and local BGP routes:</p> <ul style="list-style-type: none"> external: External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Default distance is 200. internal: Internal routes are routes learned from a BGP entity within the same autonomous system. Default distance is 200. local: Local routes are networks listed with a network router configuration command for that router or for networks that are redistributed from another process. Default distance is 200. <p>The <code>no distance bgp</code> and <code>default distance bgp</code> commands restore the default administrative distances by removing the <code>distance bgp</code> command from <i>running-config</i>.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <pre>distance bgp external_dist [<i>INTERNAL_LOCAL</i>]</pre> <pre>no distance bgp</pre> <pre>default distance bgp</pre> <p>Parameters</p> <ul style="list-style-type: none"> <i>external_dist</i> distance assigned to external routes. Values range from 1 to 255. <i>INTERNAL_LOCAL</i> distance assigned to internal and local routes. Values for both routes range from 1 to 255. Options include: <ul style="list-style-type: none"> <code><no parameter></code> <i>external_dist</i> value is assigned to internal and local routes. <i>internal_dist local_dist</i> values assigned to internal (<i>internal_dist</i>) and local (<i>local_dist</i>) routes. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1583.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1360; Arista User Manual, v. 4.11.1 (1/11/13), at 1106; Arista User Manual v. 4.10.3 (10/22/12), at 918; Arista User Manual v. 4.9.3.2 (5/3/12), at 684; Arista User Manual v. 4.8.2 (11/18/11), at 514; Arista User Manual v. 4.7.3 (7/18/11), at 379.</p>
Syntax Description	<i>internal-distance</i>	Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.						
	<i>external-distance</i>	Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.						

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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<p>distance (EIGRP)</p> <p>To allow the use of two administrative distances—internal and external—for the Enhanced Interior Gateway Routing Protocol (EIGRP) that could provide a better route to a node, use the <code>distance</code> command. To reset to default, use the <code>no</code> form of this command.</p> <p><code>distance</code> <i>internal-distance external-distance</i></p> <p><code>no distance</code></p> <table><tr><td>Syntax Description</td><td><i>internal-distance</i> Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.</td></tr><tr><td></td><td><i>external-distance</i> Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.</td></tr></table> <p>Defaults</p> <p><i>internal-distance</i>: 90 <i>external-distance</i>: 170</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 5.x (2010), at L3-171.</p>	Syntax Description	<i>internal-distance</i> Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.		<i>external-distance</i> Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.	<p>distance bgp</p> <p>The <code>distance bgp</code> command assigns an administrative distance to routes that the switch learns through BGP. Routers use administrative distances to select a route when two protocols provide routing information to the same destination. Distance values range from 1 to 255; lower distance values correspond to higher reliability. BGP routing tables do not include routes with a distance of 255.</p> <p>The distance command assigns distance values to external, internal, and local BGP routes:</p> <ul style="list-style-type: none">external: External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Default distance is 200.internal: Internal routes are routes learned from a BGP entity within the same autonomous system. Default distance is 200.local: Local routes are networks listed with a network router configuration command for that router or for networks that are redistributed from another process. Default distance is 200. <p>The <code>no distance bgp</code> and <code>default distance bgp</code> commands restore the default administrative distances by removing the <code>distance bgp</code> command from <i>running-config</i>.</p> <p>Platform all Command Mode Router-BGP Configuration</p> <p>Command Syntax</p> <p><code>distance bgp external_dist [INTERNAL_LOCAL]</code> <code>no distance bgp</code> <code>default distance bgp</code></p> <p>Parameters</p> <ul style="list-style-type: none"><i>external_dist</i> distance assigned to external routes. Values range from 1 to 255.<i>INTERNAL_LOCAL</i> distance assigned to internal and local routes. Values for both routes range from 1 to 255. Options include:<ul style="list-style-type: none"><code><no parameter></code> <i>external_dist</i> value is assigned to internal and local routes.<i>internal_dist local_dist</i> values assigned to internal (<i>internal_dist</i>) and local (<i>local_dist</i>) routes. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1583.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1360; Arista User Manual, v. 4.11.1 (1/11/13), at 1106; Arista User Manual v. 4.10.3 (10/22/12), at 918; Arista User Manual v. 4.9.3.2 (5/3/12), at 684; Arista User Manual v. 4.8.2 (11/18/11), at 514; Arista User Manual v. 4.7.3 (7/18/11), at 379.</p>
	Syntax Description	<i>internal-distance</i> Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.				
	<i>external-distance</i> Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.					

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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<div><div>distance (EIGRP)</div><div><p>To allow the use of two administrative distances—internal and external—for the Enhanced Interior Gateway Routing Protocol (EIGRP) that could provide a better route to a node, use the distance command. To reset to default, use the no form of this command.</p><div><div>distance</div>internal-distance external-distance</div><div><div>no distance</div></div></div><div><table><tr><td>Syntax Description</td><td><div><div>internal-distance</div><div>Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.</div></div></td><td><div><div>external-distance</div><div>Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.</div></div></td></tr></table><div><div>Defaults</div><div>internal-distance: 90 external-distance: 170</div></div></div><div>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 4.x (2008), at L3-104.</div></div>	Syntax Description	<div><div>internal-distance</div><div>Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.</div></div>	<div><div>external-distance</div><div>Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.</div></div>	<div><div>distance bgp</div><div><p>The distance bgp command assigns an administrative distance to routes that the switch learns through BGP. Routers use administrative distances to select a route when two protocols provide routing information to the same destination. Distance values range from 1 to 255; lower distance values correspond to higher reliability. BGP routing tables do not include routes with a distance of 255.</p><p>The distance command assigns distance values to external, internal, and local BGP routes:</p><ul style="list-style-type: none"><div><div>external</div>External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Default distance is 200.</div><div><div>internal</div>Internal routes are routes learned from a BGP entity within the same autonomous system. Default distance is 200.</div><div><div>local</div>Local routes are networks listed with a network router configuration command for that router or for networks that are redistributed from another process. Default distance is 200.</div><p>The no distance bgp and default distance bgp commands restore the default administrative distances by removing the distance bgp command from running-config.</p><div><div>Platform</div>all</div><div><div>Command Mode</div>Router-BGP Configuration</div><div><div>Command Syntax</div><div><div>distance bgp</div>external_dist [INTERNAL_LOCAL]</div><div><div>no distance bgp</div></div><div><div>default distance bgp</div></div></div><div><div>Parameters</div><ul style="list-style-type: none"><div><div>external_dist</div>distance assigned to external routes. Values range from 1 to 255.</div><div><div>INTERNAL_LOCAL</div>distance assigned to internal and local routes. Values for both routes range from 1 to 255. Options include:<ul style="list-style-type: none"><div><div><no parameter></div>external_dist value is assigned to internal and local routes.</div><div><div>internal_dist local_dist</div>values assigned to internal (internal_dist) and local (local_dist) routes.</div></div></div></div></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1583.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1360; Arista User Manual, v. 4.11.1 (1/11/13), at 1106; Arista User Manual v. 4.10.3 (10/22/12), at 918; Arista User Manual v. 4.9.3.2 (5/3/12), at 684; Arista User Manual v. 4.8.2 (11/18/11), at 514; Arista User Manual v. 4.7.3 (7/18/11), at 379.</div>
	Syntax Description	<div><div>internal-distance</div><div>Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.</div></div>	<div><div>external-distance</div><div>Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.</div></div>		

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Cisco IOS 15.0 Effective date of registration: 11/28/2014	<div>distance (EIGRP)</div> <div>To allow the use of two administrative distances—internal and external—for the Enhanced Interior Gateway Routing Protocol (EIGRP) that could provide a better route to a node, use the distance command. To reset to default, use the no form of this command.</div> <div><div>distance</div> internal-distance external-distance</div> <div><div>no distance</div></div> <div><table><tr><td>Syntax Description</td><td><div>internal-distance</div>Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.</td></tr><tr><td></td><td><div>external-distance</div>Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.</td></tr></table></div> <div><div>Defaults</div><div>internal-distance: 90 external-distance: 170</div></div> <div>Cisco IOS IP Routing: EIGRP Command Reference (2009), at IRE-33.</div>	Syntax Description	<div>internal-distance</div> Administrative distance for EIGRP internal routes. Internal routes are routes that are learned from another entity within the same autonomous system (AS). The distance can be a value from 1 to 255. The default value is 90.		<div>external-distance</div> Administrative distance for EIGRP external routes. External routes are routes for which the best path is learned from a source external to this autonomous system. The distance can be a value from 1 to 255. The default value is 170.	<div>distance bgp</div> <div>The distance bgp command assigns an administrative distance to routes that the switch learns through BGP. Routers use administrative distances to select a route when two protocols provide routing information to the same destination. Distance values range from 1 to 255; lower distance values correspond to higher reliability. BGP routing tables do not include routes with a distance of 255.</div> <div>The distance command assigns distance values to external, internal, and local BGP routes:</div> <div><ul style="list-style-type: none"><div>external</div>: External routes are routes for which the best path is learned from a neighbor external to the autonomous system. Default distance is 200.<div>internal</div>: Internal routes are routes learned from a BGP entity within the same autonomous system. Default distance is 200.<div>local</div>: Local routes are networks listed with a network router configuration command for that router or for networks that are redistributed from another process. Default distance is 200.</div> <div>The no distance bgp and default distance bgp commands restore the default administrative distances by removing the distance bgp command from running-config.</div> <div><div>Platform</div>all</div> <div><div>Command Mode</div>Router-BGP Configuration</div> <div>Command Syntax</div> <div><div>distance bgp</div> external_dist [INTERNAL_LOCAL]</div> <div><div>no distance</div> bgp</div> <div><div>default distance</div> bgp</div> <div>Parameters</div> <div><ul style="list-style-type: none"><div>external_dist</div> distance assigned to external routes. Values range from 1 to 255.<div>INTERNAL_LOCAL</div> distance assigned to internal and local routes. Values for both routes range from 1 to 255. Options include:<ul style="list-style-type: none"><div><no parameter></div> external_dist value is assigned to internal and local routes.<div>internal_dist local_dist</div> values assigned to internal (internal_dist) and local (local_dist) routes.</div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1583.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1360; Arista User Manual, v. 4.11.1 (1/11/13), at 1106; Arista User Manual v. 4.10.3 (10/22/12), at 918; Arista User Manual v. 4.9.3.2 (5/3/12), at 684; Arista User Manual v. 4.8.2 (11/18/11), at 514; Arista User Manual v. 4.7.3 (7/18/11), at 379.</div>
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>When you configure the <code>ip</code> command on an interface, the handling of proxy Address Resolution Protocol (ARP) requests changes (unless proxy ARP was disabled). Hosts send ARP requests to map an IP address to a MAC address. The GLBP gateway intercepts the ARP requests and replies to the ARP requests on behalf of the connected nodes. If a forwarder in the GLBP group is active, proxy ARP requests are answered using the MAC address of the first active forwarder in the group. If no forwarder is active, proxy ARP responses are suppressed.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 256.</p>	<p>Displaying ARP Entries</p> <p>The <code>show ip arp</code> command displays ARP cache entries that map an IP address to a corresponding MAC address. The table displays addresses by their host names when the command includes the <code>resolve</code> argument.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1225.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1038; Arista User Manual, v. 4.11.1 (1/11/13), at 840; Arista User Manual v. 4.10.3 (10/22/12), at 687.</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>When you configure the <code>ip</code> command on an interface, the handling of proxy Address Resolution Protocol (ARP) requests changes (unless proxy ARP was disabled). Hosts send ARP requests to map an IP address to a MAC address. The GLBP gateway intercepts the ARP requests and replies to the ARP requests on behalf of the connected nodes. If a forwarder in the GLBP group is active, proxy ARP requests are answered using the MAC address of the first active forwarder in the group. If no forwarder is active, proxy ARP responses are suppressed.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 5.x (2010), at L3-236.</p>	<p>Displaying ARP Entries</p> <p>The <code>show ip arp</code> command displays ARP cache entries that map an IP address to a corresponding MAC address. The table displays addresses by their host names when the command includes the <code>resolve</code> argument.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1225.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1038; Arista User Manual, v. 4.11.1 (1/11/13), at 840; Arista User Manual v. 4.10.3 (10/22/12), at 687.</p>
<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>When you configure the <code>ip</code> command on an interface, the handling of proxy Address Resolution Protocol (ARP) requests changes (unless proxy ARP was disabled). Hosts send ARP requests to map an IP address to a MAC address. The GLBP gateway intercepts the ARP requests and replies to the ARP requests on behalf of the connected nodes. If a forwarder in the GLBP group is active, proxy ARP requests are answered using the MAC address of the first active forwarder in the group. If no forwarder is active, proxy ARP responses are suppressed.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 4.x (2008), at L3-143.</p>	<p>Displaying ARP Entries</p> <p>The <code>show ip arp</code> command displays ARP cache entries that map an IP address to a corresponding MAC address. The table displays addresses by their host names when the command includes the <code>resolve</code> argument.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1225.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1038; Arista User Manual, v. 4.11.1 (1/11/13), at 840; Arista User Manual v. 4.10.3 (10/22/12), at 687.</p>

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Cisco IOS 15.0 Effective date of registration: 11/28/2014	<p>Address Resolution Protocol (ARP) is an Internet protocol used to map an IP address to a MAC address. ARP finds the MAC address, also known as the hardware address, of an IP-routed host from its known IP address and maintains this mapping information in a table. The router uses this IP address and MAC address mapping information to send IP packets to the next-hop router in the network.</p> <p>Cisco IOS IP Addressing Services Configuration Guide (2009), at CSI-CLI-00061623.</p>	<p>Displaying ARP Entries</p> <p>The <code>show ip arp</code> command displays ARP cache entries that map an IP address to a corresponding MAC address. The table displays addresses by their host names when the command includes the <code>resolve</code> argument.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1225.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1038; Arista User Manual, v. 4.11.1 (1/11/13), at 840; Arista User Manual v. 4.10.3 (10/22/12), at 687.</p>
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>Expanded Community Lists</p> <p>Expanded community lists are used to filter communities using a regular expression. Regular expressions are used to configure patterns to match community attributes. The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it will match the earliest part first.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 274.</p>	<p>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it matches the earliest part first.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 107.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 105; Arista User Manual, v. 4.11.1 (1/11/13), at 65; Arista User Manual v. 4.12.3 (7/17/13), at 95; Arista User Manual v. 4.10.3 (10/22/12), at 57; Arista User Manual v. 4.9.3.2 (5/3/12), at 53; Arista User Manual v. 4.8.2 (11/18/11), at 49.</p>
Cisco IOS 15.0 Effective date of registration: 11/28/2014	<p>Expanded Community Lists</p> <p>Expanded community lists are used to filter communities using a regular expression. Regular expressions are used to configure patterns to match community attributes. The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it will match the earliest part first.</p> <p>Cisco IOS IP Routing: BGP Command Reference, (2009), at 274.</p>	<p>The order for matching using the * or + character is longest construct first. Nested constructs are matched from the outside in. Concatenated constructs are matched beginning at the left side. If a regular expression can match two different parts of an input string, it matches the earliest part first.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 107.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 105; Arista User Manual, v. 4.11.1 (1/11/13), at 65; Arista User Manual v. 4.12.3 (7/17/13), at 95; Arista User Manual v. 4.10.3 (10/22/12), at 57; Arista User Manual v. 4.9.3.2 (5/3/12), at 53; Arista User Manual v. 4.8.2 (11/18/11), at 49.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Static routes have a default administrative distance of 1. If you want a dynamic routing protocol to take precedence over a static route, you must configure the static route preference argument to be greater than the administrative distance of the dynamic routing protocol. For example, routes derived with Enhanced Interior Gateway Routing Protocol (EIGRP) have a default administrative distance of 100. To have a static route that would be overridden by an EIGRP dynamic route, specify an administrative distance greater than 100.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 337.</p>	<p>Static routes have a default administrative distance of 1. Assigning a higher administrative distance to a static route configures it to be overridden by dynamic routing data. For example, a static route with a distance value of 200 is overridden by OSPF intra-area routes with a default distance of 110.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2/2014), at 1226.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1082; Arista User Manual, v. 4.11.1 (1/11/13), at 860; Arista User Manual v. 4.10.3 (10/22/12), at 683.</p>
<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Static routes have a default administrative distance of 1. If you want a dynamic routing protocol to take precedence over a static route, you must configure the static route preference argument to be greater than the administrative distance of the dynamic routing protocol. For example, routes derived with Enhanced Interior Gateway Routing Protocol (EIGRP) have a default administrative distance of 100. To have a static route that would be overridden by an EIGRP dynamic route, specify an administrative distance greater than 100.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 5.x (2010), at L3-311.</p>	<p>Static routes have a default administrative distance of 1. Assigning a higher administrative distance to a static route configures it to be overridden by dynamic routing data. For example, a static route with a distance value of 200 is overridden by OSPF intra-area routes with a default distance of 110.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2/2014), at 1226.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1082; Arista User Manual, v. 4.11.1 (1/11/13), at 860; Arista User Manual v. 4.10.3 (10/22/12), at 683.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>is-type</p> <p>To configure the routing level for an instance of the Intermediate System-to-Intermediate System (IS-IS) routing process, use the is-type command. To reset the default value, use the no form of this command.</p> <p>is-type {level-1 level-1-2 level-2}</p> <p>no is-type {level-1 level-1-2 level-2}</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 407.</p>	<p>is-type</p> <p>The is-type command configures the routing level for an instance of the IS-IS routing instance.</p> <p>Platform all Command Mode Router-IS-IS Configuration</p> <p>Command Syntax is-type LAYER_VALUE</p> <p>Parameters</p> <ul style="list-style-type: none"> LAYER_VALUE layer value. Options include: <ul style="list-style-type: none"> level-1 The switch operates as a Level-1 (intra-area) router. level-2 The switch operates as a Level-2 (inter-area) router. <p>Example</p> <ul style="list-style-type: none"> These commands configure Level 2 routing on interface Ethernet 5. <pre>switch(config)#router isis Osiris switch(config-router-isis)#is-type level-2 switch(config-router-isis)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1691.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1451.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>is-type</p> <p>To configure the routing level for an instance of the Intermediate System-to-Intermediate System (IS-IS) routing process, use the is-type command. To reset the default value, use the no form of this command.</p> <p>is-type {level-1 level-1-2 level-2}</p> <p>no is-type {level-1 level-1-2 level-2}</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 5.x (2010), at L3-373.</p>	<p>is-type</p> <p>The is-type command configures the routing level for an instance of the IS-IS routing instance.</p> <p>Platform all Command Mode Router-IS-IS Configuration</p> <p>Command Syntax is-type LAYER_VALUE</p> <p>Parameters</p> <ul style="list-style-type: none"> LAYER_VALUE layer value. Options include: <ul style="list-style-type: none"> level-1 The switch operates as a Level-1 (intra-area) router. level-2 The switch operates as a Level-2 (inter-area) router. <p>Example</p> <ul style="list-style-type: none"> These commands configure Level 2 routing on interface Ethernet 5. <pre>switch(config)#router isis Osiris switch(config-router-isis)#is-type level-2 switch(config-router-isis)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1691.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1451.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>is-type</p> <p>To configure the routing level for an instance of the Intermediate System-to-Intermediate System (IS-IS) routing process, use the is-type command. To reset the default value, use the no form of this command.</p> <p>is-type {level-1 level-1-2 level-2}</p> <p>no is-type {level-1 level-1-2 level-2}</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 4.x (2008), at L3-208.</p>	<p>is-type</p> <p>The is-type command configures the routing level for an instance of the IS-IS routing instance.</p> <p>Platform all Command Mode Router-IS-IS Configuration</p> <p>Command Syntax is-type LAYER_VALUE</p> <p>Parameters</p> <ul style="list-style-type: none"> LAYER_VALUE layer value. Options include: <ul style="list-style-type: none"> level-1 The switch operates as a Level-1 (intra-area) router. level-2 The switch operates as a Level-2 (inter-area) router. <p>Example</p> <ul style="list-style-type: none"> These commands configure Level 2 routing on interface Ethernet 5. <pre>switch(config)#router isis Osiris switch(config-router-isis)#is-type level-2 switch(config-router-isis)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1691.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1451.</p>

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<p>Cisco IOS 15.0</p> <p>Effective date of registration: 11/28/2014</p>	<p>is-type</p> <p>To configure the routing level for an instance of the Intermediate System-to-Intermediate System (IS-IS) routing process, use the is-type command in router configuration mode. To reset the default value, use the no form of this command.</p> <p>is-type [level-1 level-1-2 level-2 only]</p> <p>no is-type [level-1 level-1-2 level-2-only]</p> <p>Cisco IOS IP Routing: ISIS Command Reference (2009), at IRS-73.</p>	<p>is-type</p> <p>The is-type command configures the routing level for an instance of the IS-IS routing instance.</p> <p>Platform all Command Mode Router-IS-IS Configuration</p> <p>Command Syntax is-type LAYER_VALUE</p> <p>Parameters</p> <ul style="list-style-type: none"> LAYER_VALUE layer value. Options include: <ul style="list-style-type: none"> level-1 The switch operates as a Level-1 (intra-area) router. level-2 The switch operates as a Level-2 (inter-area) router. <p>Example</p> <ul style="list-style-type: none"> These commands configure Level 2 routing on interface Ethernet 5. <pre>switch(config)#router isis Osiris switch(config-router-isis)#is-type level-2 switch(config-router-isis)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1691.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1451.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>isis hello-multiplier</p> <p>To specify the number of Intermediate System-to-Intermediate System (IS-IS) hello packets a neighbor must miss before the router should declare the adjacency as down, use the isis hello-multiplier command. To restore the default value, use the no form of this command.</p> <p>isis hello-multiplier multiplier [level-1 level-2]</p> <p>no isis hello-multiplier [level-1 level-2]</p> <table border="1"> <tr> <td>Syntax Description</td><td><i>multiplier</i></td><td>Integer value. Range: 3 to 1000. Default: 3.</td></tr> <tr> <td></td><td>level-1</td><td>Configures the hello multiplier independently for Level 1 adjacencies.</td></tr> <tr> <td></td><td>level-2</td><td>Configures the hello multiplier independently for Level 2 adjacencies.</td></tr> </table> <p>Command Default The default settings are as follows:</p> <ul style="list-style-type: none"> <i>multiplier</i>: 3 Level 1 and Level 2 <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 423.</p>	Syntax Description	<i>multiplier</i>	Integer value. Range: 3 to 1000. Default: 3.		level-1	Configures the hello multiplier independently for Level 1 adjacencies.		level-2	Configures the hello multiplier independently for Level 2 adjacencies.	<p>isis hello-multiplier</p> <p>The isis hello-multiplier command specifies the number of IS-IS hello packets a neighbor must miss before the device should declare the adjacency as down.</p> <p>Each hello packet contains a hold time. The hold time informs the receiving devices how long to wait without seeing another hello from the sending device before considering the sending device down. The isis hello-multiplier command is used to calculate the hold time announced in hello packets by multiplying this number with the configured isis hello-interval.</p> <p>The no isis hello-multiplier and default isis hello-multiplier commands restore the default hello interval of 3 on the configuration mode interface by removing the isis hello-multiplier command from <i>running-config</i>.</p> <p>Platform all</p> <p>Command Mode Interface-Ethernet Configuration Interface-Loopback Configuration Interface-Port-channel Configuration Interface-VLAN Configuration</p> <p>Command Syntax</p> <p>isis hello-multiplier factor no isis hello-multiplier default isis hello-multiplier</p> <p>Parameters</p> <ul style="list-style-type: none"> <i>factor</i> hello multiplier. Values range from 3 to 100; default is 3 <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1685.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1447.</p>
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>isis priority</div> <p>To configure the priority of designated routers, use the <code>isis priority</code> command in interface configuration mode. To reset the default priority, use the <code>no</code> form of this command.</p> <div>isis priority number-value [level-1 level-2]</div> <div>no isis priority [level-1 level-2]</div> <table><tr><td>Syntax Description</td><td>number-value</td><td>Priority of a router and is a number from 0 to 127. The default value is 64.</td></tr><tr><td></td><td>level-1</td><td>(Optional) Sets the priority for Level 1 independently.</td></tr><tr><td></td><td>level-2</td><td>(Optional) Sets the priority for Level 2 independently.</td></tr></table> <div>Defaults</div> <div>Priority of 64 Level 1 and Level 2</div> <div>Command Modes</div> <div>Interface configuration</div> <div>SupportedUserRoles</div> <div>network-admin vdc-admin</div> <div>Command History</div> <table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table> <div>Usage Guidelines</div> <div>Priorities can be configured for Level 1 and Level 2 independently. Specifying the <code>level-1</code> or <code>level-2</code> keyword resets priority only for Level 1 or Level 2 routing, respectively.</div> <div>The priority is used to determine which router on a LAN will be the designated router or Designated Intermediate System (DIS). The priorities are advertised in the hello packets. The router with the highest priority will become the DIS.</div> <div>In Intermediate System-to-Intermediate System (IS-IS), there is no backup designated router. Setting the priority to 0 lowers the chance of this system becoming the DIS, but does not prevent it. If a router with a higher priority comes on line, it will take over the role from the current DIS. In the case of equal priorities, the highest MAC address breaks the tie.</div> <div>This command requires the Enterprise Services license.</div>	Syntax Description	number-value	Priority of a router and is a number from 0 to 127. The default value is 64.		level-1	(Optional) Sets the priority for Level 1 independently.		level-2	(Optional) Sets the priority for Level 2 independently.	Release	Modification	4.0(1)	This command was introduced.	<div>isis priority</div> <p>The <code>isis priority</code> command configures IS-IS router priority for the configuration mode interface.</p> <p>The priority is used to determine which device will be the Designated Intermediate System (DIS). The device with the highest priority will become the DIS.</p> <p>In IS-IS, there is no backup designated router. Setting the priority to 0 lowers the chance of this system becoming the DIS, but does not prevent it. If a device with a higher priority comes on line, it will take over the role from the current DIS.</p> <p>The <code>no isis priority</code> and default <code>isis priority</code> commands restore the default priority (64) on the configuration mode interface.</p> <div>Platformall</div> <div>Command ModeInterface-Ethernet Configuration Interface-Loopback Configuration Interface-Port-channel Configuration Interface-VLAN Configuration</div> <div>Command Syntax</div> <div>isis priority priority_level</div> <div>no isis priority</div> <div>default isis priority</div> <div>Parameters</div> <div><ul style="list-style-type: none">priority_level priority level. Value ranges from 0 to 127. Default value is 64.</div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1690.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1450.</div>
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Cisco IOS 15.0 Effective date of registration: 11/28/2014	<div>isis priority</div> <p>To configure the priority of designated routers, use the <code>isis priority</code> command in interface configuration mode. To reset the default priority, use the <code>no</code> form of this command.</p> <div>isis priority number-value [level-1 level-2]</div> <div>no isis priority [level-1 level-2]</div> <table><tr><td>Syntax Description</td><td>number-value</td><td>Priority of a router and is a number from 0 to 127. The default value is 64.</td></tr><tr><td></td><td>level-1</td><td>(Optional) Sets the priority for Level 1 independently.</td></tr><tr><td></td><td>level-2</td><td>(Optional) Sets the priority for Level 2 independently.</td></tr></table> <div>Defaults</div> <div>Priority of 64 Level 1 and Level 2</div> <div>Command Modes</div> <div>Interface configuration</div> <div>SupportedUserRoles</div> <div>network-admin vdc-admin</div> <div>Command History</div> <table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table> <div>Usage Guidelines</div> <p>Priorities can be configured for Level 1 and Level 2 independently. Specifying the <code>level-1</code> or <code>level-2</code> keyword resets priority only for Level 1 or Level 2 routing, respectively.</p> <p>The priority is used to determine which router on a LAN will be the designated router or Designated Intermediate System (DIS). The priorities are advertised in the hello packets. The router with the highest priority will become the DIS.</p> <p>In Intermediate System-to-Intermediate System (IS-IS), there is no backup designated router. Setting the priority to 0 lowers the chance of this system becoming the DIS, but does not prevent it. If a router with a higher priority comes on line, it will take over the role from the current DIS. In the case of equal priorities, the highest MAC address breaks the tie.</p> <p>This command requires the Enterprise Services license.</p> <div>Cisco IOS IP Routing: ISIS Command Reference (2009), at IRS-63.</div>	Syntax Description	number-value	Priority of a router and is a number from 0 to 127. The default value is 64.		level-1	(Optional) Sets the priority for Level 1 independently.		level-2	(Optional) Sets the priority for Level 2 independently.	Release	Modification	4.0(1)	This command was introduced.	<div>isis priority</div> <p>The <code>isis priority</code> command configures IS-IS router priority for the configuration mode interface.</p> <p>The priority is used to determine which device will be the Designated Intermediate System (DIS). The device with the highest priority will become the DIS.</p> <p>In IS-IS, there is no backup designated router. Setting the priority to 0 lowers the chance of this system becoming the DIS, but does not prevent it. If a device with a higher priority comes on line, it will take over the role from the current DIS.</p> <p>The <code>no isis priority</code> and default <code>isis priority</code> commands restore the default priority (64) on the configuration mode interface.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Loopback Configuration Interface-Port-channel Configuration Interface-VLAN Configuration</td></tr></table> <div>Command Syntax</div> <div>isis priority priority_level</div> <div>no isis priority</div> <div>default isis priority</div> <div>Parameters</div> <ul style="list-style-type: none">priority_level priority level. Value ranges from 0 to 127. Default value is 64. <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1690.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1450.</div>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Loopback Configuration Interface-Port-channel Configuration Interface-VLAN Configuration
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Copyright Registration Information	Cisco	Arista																														
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>log-adjacency-changes (IS-IS)</div> <p>To enable the router to send a syslog message when an Intermediate System-to-Intermediate System Intradomain Routing Protocol (IS-IS) neighbor goes up or down, use the <code>log-adjacency-changes</code> configuration mode command. To disable this function, use the <code>no</code> form of this command.</p> <div>log-adjacency-changes</div> <div>no log-adjacency-changes</div> <table><tr><td>Syntax Description</td><td>This command has no arguments or keywords.</td></tr><tr><td>Defaults</td><td>This command is enabled by default.</td></tr><tr><td>Command Modes</td><td>Router configuration VRF configuration</td></tr><tr><td>SupportedUserRoles</td><td>network-admin vdc-admin</td></tr><tr><td>Command History</td><td><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></td></tr><tr><td>Usage Guidelines</td><td>The <code>log-adjacency-changes</code> command is on by default but only up/down (full/down) events are reported.</td></tr><tr><td>Examples</td><td>This example configures the router to send a syslog message when an IS-IS neighbor state changes: <pre>switch(config)# router isis switch(config-router)# log-adjacency-changes</pre></td></tr><tr><td>Related Commands</td><td><table><tr><th>Command</th><th>Description</th></tr><tr><td>feature isis</td><td>Enables IS-IS on the router.</td></tr><tr><td>router isis</td><td>Enables IS-IS.</td></tr></table></td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 138.</p>	Syntax Description	This command has no arguments or keywords.	Defaults	This command is enabled by default.	Command Modes	Router configuration VRF configuration	SupportedUserRoles	network-admin vdc-admin	Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table>	Release	Modification	4.0(1)	This command was introduced.	Usage Guidelines	The <code>log-adjacency-changes</code> command is on by default but only up/down (full/down) events are reported.	Examples	This example configures the router to send a syslog message when an IS-IS neighbor state changes: <pre>switch(config)# router isis switch(config-router)# log-adjacency-changes</pre>	Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>feature isis</td><td>Enables IS-IS on the router.</td></tr><tr><td>router isis</td><td>Enables IS-IS.</td></tr></table>	Command	Description	feature isis	Enables IS-IS on the router.	router isis	Enables IS-IS.	<div>log-adjacency-changes (IS-IS)</div> <p>The <code>log-adjacency-changes</code> command configures the switch to send syslog messages either when it detects IS-IS link state changes or when it detects that a neighbor has gone up or down. Log message sending is disabled by default.</p> <p>The default option is active when <i>running-config</i> does not contain any form of the command. Entering the command in any form replaces the previous command state in <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-IS-IS Configuration</td></tr></table> <p>Command Syntax</p> <div>log-adjacency-changes</div> <div>no log-adjacency-changes</div> <div>default log-adjacency-changes</div> <p>Examples</p> <ul style="list-style-type: none">These commands configure the switch to send a syslog message when a neighbor goes up or down. <pre>switch(config)#router isis Osiris switch(config-router-isis)#log-adjacency-changes switch(config-router-isis)#</pre>These commands configure not to log the peer changes. <pre>switch(config)#router isis Osiris switch(config-router-isis)#no log-adjacency-changes switch(config-router-isis)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1692.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1452.</p>	Platform	all	Command Mode	Router-IS-IS Configuration
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<div>Cisco NX-OS 5.0</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>log-adjacency-changes (IS-IS)</div><div>To enable the router to send a syslog message when an Intermediate System-to-Intermediate System Intradomain Routing Protocol (IS-IS) neighbor goes up or down, use the log-adjacency-changes configuration mode command. To disable this function, use the no form of this command.</div><div><div>log-adjacency-changes</div><div>no log-adjacency-changes</div></div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>This command is enabled by default.</div></div><div><div>Command Modes</div><div>Router configuration VRF configuration</div></div><div><div>SupportedUserRoles</div><div>network-admin vdc-admin</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>The log-adjacency-changes command is on by default but only up/down (full/down) events are reported.</div></div><div><div>Examples</div><div>This example configures the router to send a syslog message when an IS-IS neighbor state changes: switch(config)# router isis switch(config-router)# log-adjacency-changes</div></div><div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>feature isis</td><td>Enables IS-IS on the router.</td></tr><tr><td>router isis</td><td>Enables IS-IS.</td></tr></table></div></div> <div>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 5.x (2010), at L3-403.</div>	Release	Modification	4.0(1)	This command was introduced.	Command	Description	feature isis	Enables IS-IS on the router.	router isis	Enables IS-IS.	<div><div>log-adjacency-changes (IS-IS)</div><div>The log-adjacency-changes command configures the switch to send syslog messages either when it detects IS-IS link state changes or when it detects that a neighbor has gone up or down. Log message sending is disabled by default.</div><div>The default option is active when running-config does not contain any form of the command. Entering the command in any form replaces the previous command state in running-config.</div><div><div>Platform</div><div>all</div></div><div><div>Command Mode</div><div>Router-IS-IS Configuration</div></div><div><div>Command Syntax</div><div><div>log-adjacency-changes</div><div>no log-adjacency-changes</div><div>default log-adjacency-changes</div></div></div><div><div>Examples</div><div><div>These commands configure the switch to send a syslog message when a neighbor goes up or down.</div><div>switch(config)#router isis Osiris switch(config-router-isis)#log-adjacency-changes switch(config-router-isis)#</div><div>These commands configure not to log the peer changes.</div><div>switch(config)#router isis Osiris switch(config-router-isis)#no log-adjacency-changes switch(config-router-isis)#</div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1692.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1452.</div></div></div>
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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<div>log-adjacency-changes (IS-IS)</div> <p>To enable the router to send a syslog message when an Intermediate System-to-Intermediate System Intradomain Routing Protocol (IS-IS) neighbor goes up or down, use the <code>log-adjacency-changes</code> configuration mode command. To disable this function, use the <code>no</code> form of this command.</p> <div>log-adjacency-changes</div> <div>no log-adjacency-changes</div> <table><tr><td>Syntax Description</td><td>This command has no arguments or keywords.</td></tr><tr><td>Defaults</td><td>This command is enabled by default.</td></tr><tr><td>Command Modes</td><td>Router configuration VRF configuration</td></tr><tr><td>SupportedUserRoles</td><td>network-admin vdc-admin</td></tr><tr><td>Command History</td><td><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></td></tr><tr><td>Usage Guidelines</td><td>The <code>log-adjacency-changes</code> command is on by default but only up/down (full/down) events are reported.</td></tr><tr><td>Examples</td><td>This example configures the router to send a syslog message when an IS-IS neighbor state changes: <pre>switch(config)# router isis switch(config-router)# log-adjacency-changes</pre></td></tr><tr><td>Related Commands</td><td><table><tr><th>Command</th><th>Description</th></tr><tr><td>feature isis</td><td>Enables IS-IS on the router.</td></tr><tr><td>router isis</td><td>Enables IS-IS.</td></tr></table></td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 4.x (2008), at L3-235.</p>	Syntax Description	This command has no arguments or keywords.	Defaults	This command is enabled by default.	Command Modes	Router configuration VRF configuration	SupportedUserRoles	network-admin vdc-admin	Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table>	Release	Modification	4.0(1)	This command was introduced.	Usage Guidelines	The <code>log-adjacency-changes</code> command is on by default but only up/down (full/down) events are reported.	Examples	This example configures the router to send a syslog message when an IS-IS neighbor state changes: <pre>switch(config)# router isis switch(config-router)# log-adjacency-changes</pre>	Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>feature isis</td><td>Enables IS-IS on the router.</td></tr><tr><td>router isis</td><td>Enables IS-IS.</td></tr></table>	Command	Description	feature isis	Enables IS-IS on the router.	router isis	Enables IS-IS.	<div>log-adjacency-changes (IS-IS)</div> <p>The <code>log-adjacency-changes</code> command configures the switch to send syslog messages either when it detects IS-IS link state changes or when it detects that a neighbor has gone up or down. Log message sending is disabled by default.</p> <p>The default option is active when <i>running-config</i> does not contain any form of the command. Entering the command in any form replaces the previous command state in <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-IS-IS Configuration</td></tr></table> <p>Command Syntax</p> <div>log-adjacency-changes</div> <div>no log-adjacency-changes</div> <div>default log-adjacency-changes</div> <p>Examples</p> <ul style="list-style-type: none">These commands configure the switch to send a syslog message when a neighbor goes up or down. <pre>switch(config)#router isis Osiris switch(config-router-isis)#log-adjacency-changes switch(config-router-isis)#</pre>These commands configure not to log the peer changes. <pre>switch(config)#router isis Osiris switch(config-router-isis)#no log-adjacency-changes switch(config-router-isis)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1692.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1452.</p>	Platform	all	Command Mode	Router-IS-IS Configuration
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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>max-metric router-lsa (OSPF)</div><div><p>To configure the Open Shortest Path First (OSPF) protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their shortest path first (SPF) calculations, use the max-metric router-lsa command. To disable the advertisement of a maximum metric, use the no form of this command.</p><div><div>max-metric router-lsa</div><div>external-lsa [max-metric-value]]</div><div>include-stub]]</div><div>on-startup [seconds wait-for bgp tag]]</div><div>summary-lsa [max-metric-value]]</div></div><div><div>no max-metric router-lsa</div><div>external-lsa [max-metric-value]]</div><div>include-stub]]</div><div>on-startup [seconds wait-for bgp tag]]</div><div>summary-lsa [max-metric-value]]</div></div><table><tr><td>external-lsa</td><td>Specifies the external LSA's.</td></tr><tr><td>max-metric-value</td><td>(Optional) Specifies the max-metric values for external LSA's. The range is 1-65535.</td></tr><tr><td>include-stub</td><td>Advertises the max-metric for stub links.</td></tr><tr><td>on-startup</td><td>(Optional) Configures the router to advertise a maximum metric at startup.</td></tr><tr><td>seconds</td><td>(Optional) Maximum metric (in seconds) that is advertised for the specified time interval. The configurable range is from 5 to 86400 seconds. The default is 600 seconds.</td></tr><tr><td>wait-for bgp tag</td><td>(Optional) Advertises a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.</td></tr><tr><td>summary-lsa</td><td>Specifies the summary LSA's.</td></tr><tr><td>max-metric-value</td><td>(Optional) Specifies the max-metric value for summary LSAs. The range is from 1-65535.</td></tr></table><div><div>Defaults</div><div>Originates router link-state advertisements (LSAs) with normal link metrics.</div></div><div><div>Command Modes</div><div>Router configuration Router VRF configuration</div></div><div><div>Supported User Roles</div><div>network-admin vdc-admin</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></div></div><div><div>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 194.</div></div></div>	external-lsa	Specifies the external LSA's.	max-metric-value	(Optional) Specifies the max-metric values for external LSA's. The range is 1-65535.	include-stub	Advertises the max-metric for stub links.	on-startup	(Optional) Configures the router to advertise a maximum metric at startup.	seconds	(Optional) Maximum metric (in seconds) that is advertised for the specified time interval. 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Release	Modification	4.0(1)	This command was introduced.	<div><div>max-metric router-lsa (OSPFv2)</div><div><p>The max-metric router-lsa command allows the OSPF protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their SPF calculations.</p><p>The no max-metric router-lsa and default max-metric router-lsa commands disable the advertisement of a maximum metric.</p><div><div>Platform</div><div>all</div></div><div><div>Command Mode</div><div>Router-OSPF Configuration</div></div><div><div>Command Syntax</div><div><div>max-metric router-lsa</div><div>EXTERNAL</div><div>STUB</div><div>STARTUP</div><div>SUMMARY</div></div><div><div>no max-metric router-lsa</div><div>EXTERNAL</div><div>STUB</div><div>STARTUP</div><div>SUMMARY</div></div><div><div>default max-metric router-lsa</div><div>EXTERNAL</div><div>STUB</div><div>STARTUP</div><div>SUMMARY</div></div></div><div>All parameters can be placed in any order.</div><div><div>Parameters</div><div><div><div>EXTERNAL</div><div>advertised metric value. Values include:</div><div><div><no parameter></div><div>Metric is set to the default value of 1.</div></div><div><div>external-lsa</div><div>Configures the router to override the External LSA / NSSA-External metric with the maximum metric value.</div></div><div><div>external-lsa <1 to 16777215></div><div>The configurable range is from 1 to 0xFFFFF. The default value is 0xFF0000. This range can be used with external LSA, summary LSA extensions to indicate the respective metric you want with the LSA.</div></div></div></div><div><div>STUB</div><div>advertised metric type. Values include:</div><div><div><no parameter></div><div>Metric type is set to the default value of 2.</div></div><div><div>include-stub</div><div>Advertises stub links in router-LSA with the max-metric value (0xFFFF).</div></div></div><div><div>STARTUP</div><div>limit scope of LSAs. Values include:</div><div><div><no parameter></div><div>LSA can be translated</div></div><div><div>on-startup</div><div>Configures the router to advertise a maximum metric at startup (only valid in no and default command formats).</div></div><div><div>on-startup wait-for-bgp</div><div>Configures the router to advertise a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds.</div></div><div><div>on-startup <5 to 86400></div><div>Sets the maximum metric temporarily after a reboot to originate router-LSAs with the max-metric value.</div></div><div><div>wait-for-bgp</div><div>or an on-start time value is not included in no and default commands.</div></div></div></div><div><div>SUMMARY</div><div>advertised metric value. Values include:</div><div><div><no parameter></div><div>Metric is set to the default value of 1.</div></div><div><div>summary-lsa</div><div>Configures the router to override the summary LSA metric with the maximum metric value for both type 3 and type 4 Summary LSAs.</div></div><div><div>summary-lsa <1 to 16777215></div><div>Metric is set to the specified value.</div></div></div></div></div> <div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1439.</div></div>
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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<div><div>max-metric router-lsa (OSPF)</div><div><p>To configure the Open Shortest Path First (OSPF) protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their shortest path first (SPF) calculations, use the max-metric router-lsa command. To disable the advertisement of a maximum metric, use the no form of this command.</p><div><div>max-metric router-lsa</div><div>external-lsa [max-metric-value]] [include-stub]] [on-startup [seconds wait-for bgp tag]] summary-lsa [max-metric-value]]</div></div><div><div>no max-metric router-lsa</div><div>external-lsa [max-metric-value]] [include-stub]] [on-startup [seconds wait-for bgp tag]] summary-lsa [max-metric-value]]</div></div><table><tr><td>external-lsa</td><td>Specifies the external LSA's.</td></tr><tr><td>max-metric-value</td><td>(Optional) Specifies the max-metric values for external LSA's. 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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>BGP table version is 10, local router ID is 3.3.3.3 Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist Origin codes: i - IGP, e - EGP, ? - incomplete - multipath</p> <table><thead><tr><th>Network</th><th>Next Hop</th><th>Metric</th><th>LocPrf</th><th>Weight</th><th>Path</th></tr></thead><tbody><tr><td>* i200.0.1.100/32</td><td>201.0.25.1</td><td></td><td>100</td><td>100</td><td>6553601 i</td></tr><tr><td>*>e</td><td>201.0.13.1</td><td></td><td></td><td>0</td><td>6553601 i</td></tr><tr><td>* i200.0.2.100/32</td><td>201.0.25.1</td><td></td><td>100</td><td>100</td><td>6553601 i</td></tr><tr><td>*>e</td><td>201.0.13.1</td><td></td><td></td><td>0</td><td>6553601 i</td></tr><tr><td>*>i200.0.3.100/32</td><td>0.0.0.0</td><td></td><td>100</td><td>32768</td><td>i</td></tr></tbody></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 401.</p>	Network	Next Hop	Metric	LocPrf	Weight	Path	* i200.0.1.100/32	201.0.25.1		100	100	6553601 i	*>e	201.0.13.1			0	6553601 i	* i200.0.2.100/32	201.0.25.1		100	100	6553601 i	*>e	201.0.13.1			0	6553601 i	*>i200.0.3.100/32	0.0.0.0		100	32768	i	<p>switch>show ip bgp neighbors 10.14.4.4 advertised-routes regexp _64502_ BGP routing table information for VRF default Router identifier 172.24.78.191, local AS number 64498 Route status codes: s - suppressed, * - valid, > - active, E - ECMP head, e - ECMP S - Stale Origin codes: i - IGP, e - EGP, ? - incomplete AS Path Attributes: Or-ID - Originator ID, C-LST - Cluster List, LL Nexthop - Link Local Nexthop</p> <table><thead><tr><th>Network</th><th>Next Hop</th><th>Metric</th><th>LocPrf</th><th>Weight</th><th>Path</th></tr></thead><tbody><tr><td>* > 10.99.31.0/24</td><td>10.88.202.1</td><td>333</td><td>100</td><td>-</td><td>(64502 64503) 99 i</td></tr><tr><td>* > 10.99.41.0/24</td><td>10.88.202.1</td><td>333</td><td>100</td><td>-</td><td>(64502 64503) 99 i</td></tr><tr><td>* > 10.99.99.0/24</td><td>10.88.202.1</td><td>333</td><td>100</td><td>-</td><td>(64502 64504) 99 i</td></tr></tbody></table> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1637.</p>	Network	Next Hop	Metric	LocPrf	Weight	Path	* > 10.99.31.0/24	10.88.202.1	333	100	-	(64502 64503) 99 i	* > 10.99.41.0/24	10.88.202.1	333	100	-	(64502 64503) 99 i	* > 10.99.99.0/24	10.88.202.1	333	100	-	(64502 64504) 99 i
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>show ip bgp neighbors</p> <p>To display Border Gateway Protocol (BGP) neighbors, use the show ip bgp neighbors command.</p> <p>show ip bgp neighbors [<i>addr</i>] advertised-routes flap-statistics paths received-routes routes [advertised dampened received] prefix vrf { all vrf-name }</p> <table><thead><tr><th>Syntax</th><th>Description</th></tr></thead><tbody><tr><td><i>addr</i></td><td>IPv4 address. The format is x.x.x.x</td></tr><tr><td>advertised-routes</td><td>(Optional) Displays all the routes advertised to this neighbor.</td></tr><tr><td>flap-statistics</td><td>(Optional) Displays flap statistics for the routes received from this neighbor.</td></tr><tr><td>paths</td><td>(Optional) Displays AS paths learned from this neighbor.</td></tr><tr><td>received-routes</td><td>(Optional) Displays all the routes received from this neighbor.</td></tr><tr><td>routes</td><td>(Optional) Displays the routes received or advertised to or from this neighbor.</td></tr><tr><td>advertised</td><td>(Optional) Displays all the routes advertised for this neighbor.</td></tr><tr><td>dampened</td><td>(Optional) Displays all dampened routes received from this neighbor.</td></tr><tr><td>received</td><td>(Optional) Displays all the routes received from this neighbor.</td></tr><tr><td>prefix</td><td>(Optional) IPv6 prefix. The format is x.x.x.x/length.</td></tr><tr><td>vrf vrf-name</td><td>(Optional) Specifies the virtual router context (VRF) name. The name can be any case-sensitive, alphanumeric string up to 63 characters.</td></tr><tr><td>all</td><td>(Optional) Specifies all VRF.</td></tr></tbody></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 466.</p>	Syntax	Description	<i>addr</i>	IPv4 address. The format is x.x.x.x	advertised-routes	(Optional) Displays all the routes advertised to this neighbor.	flap-statistics	(Optional) Displays flap statistics for the routes received from this neighbor.	paths	(Optional) Displays AS paths learned from this neighbor.	received-routes	(Optional) Displays all the routes received from this neighbor.	routes	(Optional) Displays the routes received or advertised to or from this neighbor.	advertised	(Optional) Displays all the routes advertised for this neighbor.	dampened	(Optional) Displays all dampened routes received from this neighbor.	received	(Optional) Displays all the routes received from this neighbor.	prefix	(Optional) IPv6 prefix. The format is x.x.x.x/length.	vrf vrf-name	(Optional) Specifies the virtual router context (VRF) name. The name can be any case-sensitive, alphanumeric string up to 63 characters.	all	(Optional) Specifies all VRF.	<p>show ip bgp neighbors</p> <p>The show ip bgp neighbors command displays Border Gateway Protocol (BGP) and TCP session data for a specified IPv4 BGP neighbor, or for all IPv4 BGP neighbors if an address is not included.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p>show ip bgp neighbors [<i>NEIGHBOR</i>] [<i>ADDR</i>] [<i>VRF</i>] [<i>INSTANCE</i>]</p> <p>Parameters</p> <ul style="list-style-type: none">NEIGHBOR_ADDR location of neighbors. Options include:<ul style="list-style-type: none"><no parameter> command displays information for all IPv4 BGP neighbors.ipv4 addr command displays information for specified neighbor.VRF_INSTANCE specifies VRF instances.<ul style="list-style-type: none"><no parameter> displays routing table for context-active VRF.vrf vrf_name displays routing table for the specified VRF.vrf all displays routing table for all VRFs.vrf default displays routing table for default VRF. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1632.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1402; Arista User Manual, v. 4.11.1 (1/11/13), at 1148; Arista User Manual v. 4.10.3 (10/22/12), at 959.</p>																																		
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	<div>show ip bgp neighbors</div> <p>To display Border Gateway Protocol (BGP) neighbors, use the <code>show ip bgp neighbors</code> command.</p> <div>show ip bgp neighbors [addr] [advertised-routes flap-statistics paths received-routes routes [advertised dampened received]] [prefix] [vrf { all vrf-name }]</div> <table><tr><td>Syntax Description</td><td>addr</td><td>IPv4 address. The format is x.x.x.x.</td></tr><tr><td></td><td>advertised-routes</td><td>(Optional) Displays all the routes advertised to this neighbor.</td></tr><tr><td></td><td>flap-statistics</td><td>(Optional) Displays flap statistics for the routes received from this neighbor.</td></tr><tr><td></td><td>paths</td><td>(Optional) Displays AS paths learned from this neighbor.</td></tr><tr><td></td><td>received-routes</td><td>(Optional) Displays all the routes received from this neighbor.</td></tr><tr><td></td><td>routes</td><td>(Optional) Displays the routes received or advertised to or from this neighbor.</td></tr><tr><td></td><td>advertised</td><td>(Optional) Displays all the routes advertised for this neighbor.</td></tr><tr><td></td><td>dampened</td><td>(Optional) Displays all dampened routes received from this neighbor.</td></tr><tr><td></td><td>received</td><td>(Optional) Displays all the routes received from this neighbor.</td></tr><tr><td></td><td>prefix</td><td>(Optional) IPv6 prefix. The format is x.x.x.x/length.</td></tr><tr><td></td><td>vrf vrf-name</td><td>(Optional) Specifies the virtual router context (VRF) name. The name can be any case-sensitive, alphanumeric string up to 63 characters.</td></tr><tr><td></td><td>all</td><td>(Optional) Specifies all VRF.</td></tr></table>	Syntax Description	addr	IPv4 address. The format is x.x.x.x.		advertised-routes	(Optional) Displays all the routes advertised to this neighbor.		flap-statistics	(Optional) Displays flap statistics for the routes received from this neighbor.		paths	(Optional) Displays AS paths learned from this neighbor.		received-routes	(Optional) Displays all the routes received from this neighbor.		routes	(Optional) Displays the routes received or advertised to or from this neighbor.		advertised	(Optional) Displays all the routes advertised for this neighbor.		dampened	(Optional) Displays all dampened routes received from this neighbor.		received	(Optional) Displays all the routes received from this neighbor.		prefix	(Optional) IPv6 prefix. The format is x.x.x.x/length.		vrf vrf-name	(Optional) Specifies the virtual router context (VRF) name. The name can be any case-sensitive, alphanumeric string up to 63 characters.		all	(Optional) Specifies all VRF.	<div>show ip bgp neighbors</div> <p>The <code>show ip bgp neighbors</code> command displays Border Gateway Protocol (BGP) and TCP session data for a specified IPv4 BGP neighbor, or for all IPv4 BGP neighbors if an address is not included.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <div>show ip bgp neighbors [NEIGHBOR ADDR] [VRF INSTANCE]</div> <p>Parameters</p> <ul style="list-style-type: none">NEIGHBOR_ADDR location of neighbors. Options include:<ul style="list-style-type: none"><no parameter> command displays information for all IPv4 BGP neighbors.ipv4 addr command displays information for specified neighbor.VRF_INSTANCE specifies VRF instances.<ul style="list-style-type: none"><no parameter> displays routing table for context-active VRF.vrf vrf_name displays routing table for the specified VRF.vrf all displays routing table for all VRFs.vrf default displays routing table for default VRF.
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Use the <code>ip ospf database</code> command to display information about different OSPF LSAs.</p> <p>When the link state advertisement is describing a network, the <code>link-state-id</code> argument can take one of two forms:</p> <ul style="list-style-type: none"> • The network's IP address (such as Type 3 summary link advertisements and autonomous system external link advertisements). • A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.) • When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID. • When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0). <p>This command requires the Enterprise Services license.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 520.</p>	<ul style="list-style-type: none"> • <code>linkstate_id</code> Network segment described by the LSA (dotted decimal notation). Value depends on the LSA type. <ul style="list-style-type: none"> — When the LSA describes a network, the <code>linkstate-id</code> argument is one of the following: <ul style="list-style-type: none"> The network IP address, as in Type 3 summary link advertisements and in autonomous system external link advertisements. A derived address obtained from the link state ID. Masking a network links the advertisement link state ID with the network subnet mask yielding the network IP address. — When the LSA describes a router, the link state ID is the OSPFv2 router ID of the router. — When an autonomous system external advertisement (Type 5) describes a default route, its link state ID is set to the default destination (0.0.0.0). <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1454.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1404; Arista User Manual v. 4.12.3 (7/17/13), at 1240; Arista User Manual, v. 4.11.1 (1/11/13), at 996; Arista User Manual v. 4.10.3 (10/22/12), at 825; Arista User Manual v. 4.9.3.2 (5/3/12), at 648; Arista User Manual v. 4.8.2 at 483; Arista User Manual v. 4.7.3 (7/18/11), at 357; Arista User Manual v. 4.6.0 (12/22/2010), at 217</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Use the <code>ip ospf database</code> command to display information about different OSPF LSAs.</p> <p>When the link state advertisement is describing a network, the <i>link-state-id</i> argument can take one of two forms:</p> <ul style="list-style-type: none"> • The network's IP address (such as Type 3 summary link advertisements and autonomous system external link advertisements). • A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.) • When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID. • When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0). <p>This command requires the Enterprise Services license.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 5.x (2010), at L3-742.</p>	<ul style="list-style-type: none"> • <i>linkstate_id</i> Network segment described by the LSA (dotted decimal notation). Value depends on the LSA type. <ul style="list-style-type: none"> — When the LSA describes a network, the <i>linkstate-id</i> argument is one of the following: <ul style="list-style-type: none"> The network IP address, as in Type 3 summary link advertisements and in autonomous system external link advertisements. A derived address obtained from the link state ID. Masking a network links the advertisement link state ID with the network subnet mask yielding the network IP address. — When the LSA describes a router, the link state ID is the OSPFv2 router ID of the router. — When an autonomous system external advertisement (Type 5) describes a default route, its link state ID is set to the default destination (0.0.0.0). <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1454.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1404; Arista User Manual v. 4.12.3 (7/17/13), at 1240; Arista User Manual, v. 4.11.1 (1/11/13), at 996; Arista User Manual v. 4.10.3 (10/22/12), at 825; Arista User Manual v. 4.9.3.2 (5/3/12), at 648; Arista User Manual v. 4.8.2 at 483; Arista User Manual v. 4.7.3 (7/18/11), at 357; Arista User Manual v. 4.6.0 (12/22/2010), at 217</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Use the <code>ip ospf database</code> command to display information about different OSPF LSAs.</p> <p>When the link state advertisement is describing a network, the <i>link-state-id</i> argument can take one of two forms:</p> <ul style="list-style-type: none"> • The network's IP address (such as Type 3 summary link advertisements and autonomous system external link advertisements). • A derived address obtained from the link state ID. (Note that masking a network links advertisement's link state ID with the network's subnet mask yields the network's IP address.) • When the link state advertisement is describing a router, the link state ID is always the described router's OSPF router ID. • When an autonomous system external advertisement (LS Type = 5) is describing a default route, its link state ID is set to Default Destination (0.0.0.0). <p>This command requires the Enterprise Services license.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference, Release 4.x (2008), at L3-426.</p>	<ul style="list-style-type: none"> • <i>linkstate_id</i> Network segment described by the LSA (dotted decimal notation). Value depends on the LSA type. <ul style="list-style-type: none"> — When the LSA describes a network, the <i>linkstate-id</i> argument is one of the following: <ul style="list-style-type: none"> The network IP address, as in Type 3 summary link advertisements and in autonomous system external link advertisements. A derived address obtained from the link state ID. Masking a network links the advertisement link state ID with the network subnet mask yielding the network IP address. — When the LSA describes a router, the link state ID is the OSPFv2 router ID of the router. — When an autonomous system external advertisement (Type 5) describes a default route, its link state ID is set to the default destination (0.0.0.0). <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1454.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1404; Arista User Manual v. 4.12.3 (7/17/13), at 1240; Arista User Manual, v. 4.11.1 (1/11/13), at 996; Arista User Manual v. 4.10.3 (10/22/12), at 825; Arista User Manual v. 4.9.3.2 (5/3/12), at 648; Arista User Manual v. 4.8.2 at 483; Arista User Manual v. 4.7.3 (7/18/11), at 357; Arista User Manual v. 4.6.0 (12/22/2010), at 217</p>

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>timers lsa-arrival (OSPF)</div><div><div>To set the minimum interval in which the software accepts the same link-state advertisement (LSA) from Open Shortest Path First (OSPF) neighbors, use the timers lsa-arrival command. To return to the default, use the no form of this command.</div><div><div>timers lsa-arrival milliseconds</div><div>no timers lsa-arrival</div></div></div><table><tr><td>Syntax Description</td><td>milliseconds</td><td>Minimum delay (in milliseconds) that must pass between acceptance of the same LSA arriving from neighbors. The range is from 10 to 600,000 milliseconds. The default is 1000 milliseconds.</td></tr><tr><td>Defaults</td><td colspan="2">1000 milliseconds</td></tr><tr><td>Command Modes</td><td colspan="2">Router configuration VRF configuration</td></tr><tr><td>Supported User Roles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>4.0(1)</td><td>This command was introduced.</td></tr><tr><td>Usage Guidelines</td><td colspan="2"><div>Use the timers lsa arrival command to configure the minimum interval for accepting the same LSA. The same LSA is an LSA instance that contains the same LSA ID number, LSA type, and advertising router ID. If an instance of the same LSA arrives sooner than the interval that is set, the software drops the LSA.</div><div>We recommend that you keep the milliseconds value of the timers lsa-arrival command less than or equal to the neighbors' hold-interval value of the timers throttle lsa command.</div><div>This command requires the Enterprise Services license.</div></td></tr><tr><td></td><td>Examples</td><td>This example shows how to set the minimum interval for accepting the same LSA at 2000 milliseconds:<div>switch(config)# router ospf 1 switch(config-router)# timers lsa-arrival 2000</div></td></tr></table></div>	Syntax Description	milliseconds	Minimum delay (in milliseconds) that must pass between acceptance of the same LSA arriving from neighbors. The range is from 10 to 600,000 milliseconds. The default is 1000 milliseconds.	Defaults	1000 milliseconds		Command Modes	Router configuration VRF configuration		Supported User Roles	network-admin vdc-admin		Command History	Release	Modification		4.0(1)	This command was introduced.	Usage Guidelines	<div>Use the timers lsa arrival command to configure the minimum interval for accepting the same LSA. The same LSA is an LSA instance that contains the same LSA ID number, LSA type, and advertising router ID. If an instance of the same LSA arrives sooner than the interval that is set, the software drops the LSA.</div> <div>We recommend that you keep the milliseconds value of the timers lsa-arrival command less than or equal to the neighbors' hold-interval value of the timers throttle lsa command.</div> <div>This command requires the Enterprise Services license.</div>			Examples	This example shows how to set the minimum interval for accepting the same LSA at 2000 milliseconds: <div>switch(config)# router ospf 1 switch(config-router)# timers lsa-arrival 2000</div>	<div><div>timers lsa arrival (OSPFv2)</div><div><div>The timers lsa arrival command sets the minimum interval in which the switch accepts the same link-state advertisement (LSA) from OSPF neighbors.</div><div>The no timers lsa arrival and default timers lsa arrival commands restore the default maximum OSPFv2 path calculation interval to five seconds by removing the timers lsa arrival command from running-config.</div><div><div>Platformall</div><div>Command ModeRouter-OSPF Configuration</div></div><div><div>Command Syntax</div><div>timers lsa arrival lsa_time no timers lsa arrival default timers lsa arrival</div></div><div><div>Parameters</div><div><div>lsa_time</div><div>OSPFv2 minimum interval (seconds). Values range from 1 to 600000 milliseconds. Default is 1000 milliseconds.</div></div></div><div><div>Example</div><div><div>This command sets the minimum interval timer to ten milliseconds.</div><div>switch(config)#router ospf 6 switch(config-router-ospf)#timers lsa arrival 10 switch(config-router-ospf)#</div></div></div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1469.</div></div>
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Cisco NX-OS 4.0 Effective date of registration: 11/13/2014	<div>timers lsa-arrival (OSPF)</div> <p>To set the minimum interval in which the software accepts the same link-state advertisement (LSA) from Open Shortest Path First (OSPF) neighbors, use the <code>timers lsa-arrival</code> command. To return to the default, use the <code>no</code> form of this command.</p> <div><code>timers lsa-arrival</code> <i>milliseconds</i></div> <div><code>no timers lsa-arrival</code></div> <table><tr><td>Syntax Description</td><td><i>milliseconds</i></td><td>Minimum delay (in milliseconds) that must pass between acceptance of the same LSA arriving from neighbors. The range is from 10 to 600,000 milliseconds. The default is 1000 milliseconds.</td></tr><tr><td>Defaults</td><td colspan="2">1000 milliseconds</td></tr><tr><td>Command Modes</td><td colspan="2">Router configuration VRF configuration</td></tr><tr><td>Supported User Roles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></td><td></td></tr><tr><td>Usage Guidelines</td><td colspan="2"><p>Use the <code>timers lsa arrival</code> command to configure the minimum interval for accepting the same LSA. The same LSA is an LSA instance that contains the same LSA ID number, LSA type, and advertising router ID. If an instance of the same LSA arrives sooner than the interval that is set, the software drops the LSA.</p><p>We recommend that you keep the <i>milliseconds</i> value of the <code>timers lsa-arrival</code> command less than or equal to the neighbors' <i>hold-interval</i> value of the <code>timers throttle lsa</code> command.</p><p>This command requires the Enterprise Services license.</p></td></tr><tr><td>Examples</td><td colspan="2"><p>This example shows how to set the minimum interval for accepting the same LSA at 2000 milliseconds:</p><pre>switch(config)# router ospf 1 switch(config-router)# timers lsa-arrival 2000</pre></td></tr></table>	Syntax Description	<i>milliseconds</i>	Minimum delay (in milliseconds) that must pass between acceptance of the same LSA arriving from neighbors. The range is from 10 to 600,000 milliseconds. The default is 1000 milliseconds.	Defaults	1000 milliseconds		Command Modes	Router configuration VRF configuration		Supported User Roles	network-admin vdc-admin		Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table>	Release	Modification	4.0(1)	This command was introduced.		Usage Guidelines	<p>Use the <code>timers lsa arrival</code> command to configure the minimum interval for accepting the same LSA. The same LSA is an LSA instance that contains the same LSA ID number, LSA type, and advertising router ID. If an instance of the same LSA arrives sooner than the interval that is set, the software drops the LSA.</p> <p>We recommend that you keep the <i>milliseconds</i> value of the <code>timers lsa-arrival</code> command less than or equal to the neighbors' <i>hold-interval</i> value of the <code>timers throttle lsa</code> command.</p> <p>This command requires the Enterprise Services license.</p>		Examples	<p>This example shows how to set the minimum interval for accepting the same LSA at 2000 milliseconds:</p> <pre>switch(config)# router ospf 1 switch(config-router)# timers lsa-arrival 2000</pre>		<div>timers lsa arrival (OSPFv2)</div> <p>The <code>timers lsa arrival</code> command sets the minimum interval in which the switch accepts the same link-state advertisement (LSA) from OSPF neighbors.</p> <p>The <code>no timers lsa arrival</code> and default <code>timers lsa arrival</code> commands restore the default maximum OSPFv2 path calculation interval to five seconds by removing the <code>timers lsa arrival</code> command from <i>running-config</i>.</p> <table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Router-OSPF Configuration</td></tr></table> <div>Command Syntax</div> <div><code>timers lsa arrival</code> <i>lsa_time</i></div> <div><code>no timers lsa arrival</code></div> <div><code>default timers lsa arrival</code></div> <div>Parameters</div> <ul style="list-style-type: none"><i>lsa_time</i> OSPFv2 minimum interval (seconds). Values range from 1 to 600000 milliseconds. Default is 1000 milliseconds. <div>Example</div> <ul style="list-style-type: none">This command sets the minimum interval timer to ten milliseconds. <pre>switch(config)#router ospf 6 switch(config-router-ospf)#timers lsa arrival 10 switch(config-router-ospf)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1469.</p>	Platform	all	Command Mode	Router-OSPF Configuration
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>Examples</p> <p>This example shows how to configure a router configured with the start, hold, and maximum interval values for the <code>timers throttle spf</code> command set at 5, 1000, and 90,000 milliseconds:</p> <pre>switch(config)# router ospf 1 switch(config-router)# timers throttle spf 5 1000 90000</pre> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 1033-34.</p>	<p>Example</p> <ul style="list-style-type: none"> This command displays a switch configured with the start, hold, and maximum interval values for the <code>timers throttle spf</code> command set at 5, 1,000, and 20,000 milliseconds, respectively. <pre>switch(config)#router ospf 6 switch(config-router-ospf)#timers spf 5 100 20000 switch(config-router-ospf)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1472.</p>
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>When using route reflectors, an AS is divided into clusters. A cluster consists of one or more route reflectors and a group of clients to which they re-advertise route information. Multiple route reflectors can be configured in the same cluster to increase redundancy and avoid a single point of failure. Each route reflector has a cluster ID. If the cluster has a single route reflector, the cluster ID is its router ID. If a cluster has multiple route reflectors, a 4-byte cluster ID is assigned to all route reflectors in the cluster. All of them must be configured with the same cluster ID so that they can recognize updates from other route reflectors in the same cluster. The <code>bgp cluster-id</code> command configures the cluster ID in a cluster with multiple route reflectors.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (2013), at 730.</p>	<p>cluster-id {cluster-id cluster-ip-addr}—Configures the Route Reflector Cluster-ID (router, vrf). Range: 1 to 4294967295. You can enter the cluster identification as a 32-bit quantity or as an IP address. To remove the cluster ID, use the <code>no</code> form of this command. Together, a route reflector and its clients form a cluster. When a single route reflector is deployed in a cluster, the cluster is identified by the router ID of the route reflector.</p> <p>The <code>cluster-id</code> command is used to assign a cluster ID to a route reflector when the cluster has one or more route reflectors. Multiple route reflectors are deployed in a cluster to increase redundancy and avoid a single point of failure. When multiple route reflectors are configured in a cluster, the same cluster ID is assigned to all route reflectors. This allows all route reflectors in the cluster to recognize updates from peers in the same cluster and reduces the number of updates that need to be stored in BGP routing tables.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1549.</p>
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>Local Proxy ARP</p> <p>You can use local Proxy ARP to enable a device to respond to ARP requests for IP addresses within a subnet where normally no routing is required. When you enable local Proxy ARP, ARP responds to all ARP requests for IP addresses within the subnet and forwards all traffic between hosts in the subnet. Use this feature only on subnets where hosts are intentionally prevented from communicating directly by the configuration on the device to which they are connected.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 6.x (2013), at 2-5.</p>	<p>ip local-proxy-arp</p> <p>The <code>ip local-proxy-arp</code> command enables local proxy ARP (Address Resolution Protocol) on the configuration mode interface. Local proxy ARP programs the switch to respond to ARP requests for IP addresses within a subnet where routing is not normally required. A typical local proxy arp application is supporting isolated private VLANs that communicate with each other by routing packets.</p> <p>The <code>no ip local-proxy-arp</code> and default <code>ip local-proxy-arp</code> commands disable local proxy ARP on the configuration mode interface by removing the corresponding <code>ip local-proxy-arp</code> command from <code>running-config</code>.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1276.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1231; Arista User Manual v. 4.12.3 (7/17/13), at 1073; Arista User Manual, v. 4.11.1 (1/11/13), at 876; Arista User Manual v. 4.10.3 (10/22/12), at 707.</p>

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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Local Proxy ARP</p> <p>You can use local Proxy ARP to enable a device to respond to ARP requests for IP addresses within a subnet where normally no routing is required. When you enable local Proxy ARP, ARP responds to all ARP requests for IP addresses within the subnet and forwards all traffic between hosts in the subnet. Use this feature only on subnets where hosts are intentionally prevented from communicating directly by the configuration on the device to which they are connected.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 5.x (2010), at 2-5.</p>	<p>ip local-proxy-arp</p> <p>The <code>ip local-proxy-arp</code> command enables local proxy ARP (Address Resolution Protocol) on the configuration mode interface. Local proxy ARP programs the switch to respond to ARP requests for IP addresses within a subnet where routing is not normally required. A typical local proxy arp application is supporting isolated private VLANs that communicate with each other by routing packets.</p> <p>The <code>no ip local-proxy-arp</code> and default <code>ip local-proxy-arp</code> commands disable local proxy ARP on the configuration mode interface by removing the corresponding <code>ip local-proxy-arp</code> command from <i>running-config</i>.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1276.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1231; Arista User Manual v. 4.12.3 (7/17/13), at 1073; Arista User Manual, v. 4.11.1 (1/11/13), at 876; Arista User Manual v. 4.10.3 (10/22/12), at 707.</p>
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Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	ipv6 nd reachable-time	Configures the amount of time that a remote IPv6 node is considered reachable after some reachability confirmation event has occurred.	ipv6 nd reachable-time The <code>ipv6 nd reachable-time</code> command specifies the time period that the switch includes in the reachable time field of Router Advertisements (RAs) sent from the configuration mode interface. The reachable time defines the period that a remote IPv6 node is considered reachable after a reachability confirmation event. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1359. See also Arista User Manual v. 4.12.3 (7/17/13), at 1149.



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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p><u>ipv6 nd reachable-time</u></p> <hr/> <p>Configures the amount of time <u>that a remote IPv6 node is considered reachable after some reachability confirmation event</u> has occurred.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 4.0 (2008), at 3-22.</p>	<p>ipv6 nd reachable-time</p> <p>The <u>ipv6 nd reachable-time</u> command specifies the time period that the switch includes in the reachable time field of Router Advertisements (RAs) sent from the configuration mode interface. The reachable time defines the period <u>that a remote IPv6 node is considered reachable after a reachability confirmation event</u>.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1359.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1149.</p>


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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Step 3 <code>max-metric router-lsa {external-lsa [max-metric-value]} [stub-prefix-lsa [on-startup [seconds] wait-for-bgp tag]] [inter-area-prefix-lsa [max-metric-sumlsa]]</code></p> <p>Example: <code>switch(config-router)# max-metric router-lsa on-startup wait-for-bgp</code></p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 6.x (2013), at 7-42.</p>	<p>max-metric router-lsa (OSPFv3)</p> <p>The <code>max-metric router-lsa</code> command allows the OSPFv3 protocol to advertise a maximum metric so that other routers do not prefer the router as an intermediate hop in their SPF calculations.</p> <p>The no <code>max-metric router-lsa</code> and default <code>max-metric router-lsa</code> commands disable the advertisement of a maximum metric.</p> <p>Platform all Command Mode Router-OSPF3 Configuration</p> <p>Command Syntax</p> <pre>max-metric router-lsa {EXTERNAL} [STUB] [STARTUP] [SUMMARY] no max-metric router-lsa {EXTERNAL} [STUB] [STARTUP] [SUMMARY] default max-metric router-lsa {EXTERNAL} [STUB] [STARTUP] [SUMMARY]</pre> <p>All parameters can be placed in any order.</p> <p>Parameters</p> <ul style="list-style-type: none"> EXTERNAL advertised metric value. Values include: <ul style="list-style-type: none"> <no parameter> Metric is set to the default value of 1. <code>external-lsa</code> Configures the router to override the External LSA / NSSA-External metric with the maximum metric value. <code>external-lsa <1 to 16777215></code> The configurable range is from 1 to 0xFFFFFFFF. The default value is 0xFF0000. This range can be used with external LSA, summary LSA extensions to indicate the respective metric you want with the LSA. STUB advertised metric type. Values include: <ul style="list-style-type: none"> <no parameter> Metric type is set to the default value of 2. <code>include-stub</code> Advertises stub links in router-LSA with the max-metric value (0xFFFF). STARTUP limit scope of LSAs. Values include: <ul style="list-style-type: none"> <no parameter> LSA can be translated <code>on-startup</code> Configures the router to advertise a maximum metric at startup (only valid in no and default command formats). <code>on-startup wait-for-bgp</code> Configures the router to advertise a maximum metric until Border Gateway Protocol (BGP) routing tables have converged or the default timer has expired. The default timer is 600 seconds. <code>on-startup <5 to 86400></code> Sets the maximum metric temporarily after a reboot to originate router-LSAs with the max-metric value. <p><code>wait-for-bgp</code> or an <code>on-start</code> time value is not included in no and default commands.</p> SUMMARY advertised metric value. Values include: <ul style="list-style-type: none"> <no parameter> Metric is set to the default value of 1. <code>summary-lsa</code> Configures the router to override the summary LSA metric with the maximum metric value for both type 3 and type 4 Summary LSAs. <code>summary-lsa <1 to 16777215></code> Metric is set to the specified value. <p>Example</p> <ul style="list-style-type: none"> This command shows how to configure OSPFv3 to originate router LSAs with the maximum metric until BGP indicates that it has converged: <pre>switch(config-router)ospf3#max-metric router-lsa on-startup wait-for-bgp switch(config-router-ospf3)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1519.</p>

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If the router does not receive an LSP refresh before the end of the LSP lifetime, the router deletes the LSP from the database.</p> <p>The LSP interval must be less than the LSP lifetime or the LSPs time out before they are refreshed.</p> <p>IS-IS sends periodic hello packets to adjacent routers. If you configure transient mode for hello packets, these hello packets do not include the excess padding used before IS-IS establishes adjacencies. If the MTU value on adjacent routers changes, IS-IS can detect this change and send padded hello packets for a period of time. IS-IS uses this feature to detect mismatched MTU values on adjacent routers. For more information, see the “Configuring the Transient Mode for Hello Padding” section on page 9-21.</p> <p>IS-IS Areas</p> <p>You can design IS-IS networks as a single area that includes all routers in the network or as multiple areas that connect into a backbone or Level 2 area. Routers in a nonbackbone area are Level 1 routers that establish adjacencies within a local area (intra-area routing). Level 2 area routers establish adjacencies to other Level 2 routers and perform routing between Level 1 areas (inter-area routing). A router can have both Level 1 and Level 2 areas configured. These Level 1/Level 2 routers act as area border routers that route information from the local area to the Level 2 backbone area (see Figure 9-1).</p> <p>Within a Level 1 area, routers know how to reach all other routers in that area. The Level 2 routers know how to reach other area border routers and other Level 2 routers. Level 1/Level 2 routers straddle the boundary between two areas, routing traffic to and from the Level 2 backbone area. Level 1/Level 2 routers use the attached (ATT) bit signal Level 1 routers to set a default route to this Level 1/Level 2 router to connect to the Level 2 area.</p> <p>In some instances, such as when you have two or more Level 1/Level 2 routers in an area, you may want to control which Level 1/Level 2 router that the Level 1 routers use as the default route to the Level 2 area. You can configure which Level 1/Level 2 router sets the attached bit. For more information, see the “Verifying the IS-IS Configuration” section on page 9-33.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 6.x (2013), at 9-2.</p>	<p>IS-IS Description</p> <p>IS-IS sends a hello packet out every configured interface to discover IS-IS neighbor routers. The hello packet contains information, which the receiving interface uses to determine compatibility with the originating interface. Compatible interfaces form adjacencies, which update routing information in the link-state database through link-state update messages (LSPs). If the router does not receive an LSP refresh before the end of the LSP lifetime, the device deletes the LSP from the database.</p> <p>Terms of IS-IS Routing Protocol</p> <p>The following terms are used when configuring IS-IS.</p> <ul style="list-style-type: none"> NET and System ID – Each IS-IS instance has an associated network entity title (NET). The NET consists of the IS-IS system ID, which uniquely identifies the IS-IS instance in the area and the area ID. Designated Intermediate System – IS-IS uses a Designated Intermediate System (DIS) in broadcast networks to prevent each device from forming unnecessary links with every other device on the broadcast network. IS-IS devices send LSPs to the DIS, which manages all the link-state information for the broadcast network. 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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Overload Bit</p> <p>IS-IS uses the overload bit to tell other routers not to use the local router to forward traffic but to continue routing traffic destined for that local router.</p> <p>You may want to use the overload bit in these situations:</p> <ul style="list-style-type: none"> The router is in a critical condition. Graceful introduction and removal of the router to/from the network. Other (administrative or traffic engineering) reasons such as waiting for BGP convergence. <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 5.x (2010), at 9-4.</p>	<ul style="list-style-type: none"> Overload Bit – IS-IS uses the overload bit to tell other devices not to use the local router to forward traffic but to continue routing traffic destined for that local router. Possible conditions for setting the overload bit the device is in a critical condition. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1674.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1436.</p>

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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Overload Bit</p> <p>IS-IS uses the overload bit to tell other routers not to use the local router to forward traffic but to continue routing traffic destined for that local router.</p> <p>You may want to use the overload bit in these situations:</p> <ul style="list-style-type: none"> The router is in a critical condition. Graceful introduction and removal of the router to/from the network. Other (administrative or traffic engineering) reasons such as waiting for BGP convergence. <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 4.0 (2008), at 8-4.</p>	<ul style="list-style-type: none"> Overload Bit – IS-IS uses the overload bit to tell other devices not to use the local router to forward traffic but to continue routing traffic destined for that local router. Possible conditions for setting the overload bit the device is in a critical condition. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1674.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1436.</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div><code>isis hello-multiplier num [level-1 level-2]</code></div><div>Example: <code>switch(config-if)# isis hello-multiplier 20</code></div></div> <div>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 6.x (2013), at 9-33.</div>	<div><div><div><div><code>isis hello-multiplier</code></div><div>Specifies the number of IS-IS hello packets that a neighbor must miss before the router tears down an adjacency. The range is from 3 to 1000. The default is 3.</div></div></div></div> <div><div>isis hello-multiplier</div><div>The isis hello-multiplier command specifies the number of IS-IS hello packets a neighbor must miss before the device should declare the adjacency as down.</div></div> <div><div>Each hello packet contains a hold time. The hold time informs the receiving devices how long to wait without seeing another hello from the sending device before considering the sending device down. The isis hello-multiplier command is used to calculate the hold time announced in hello packets by multiplying this number with the configured isis hello-interval.</div><div>The no isis hello-multiplier and default isis hello-multiplier commands restore the default hello interval of 3 on the configuration mode interface by removing the isis hello-multiplier command from running-config.</div></div> <div><div>Platformall</div><div>Command ModeInterface-Ethernet Configuration Interface-Loopback Configuration Interface-Port-channel Configuration Interface-VLAN Configuration</div></div> <div><div>Command Syntax</div><div><code>isis hello-multiplier factor</code> <code>no isis hello-multiplier</code> <code>default isis hello-multiplier</code></div></div> <div><div>Parameters</div><div><ul style="list-style-type: none"><code>factor</code> hello multiplier. Values range from 3 to 100; default is 3</div></div> <div><div>Examples</div><div><ul style="list-style-type: none">These commands configure a hello multiplier of 4 for VLAN 200.</div><div><code>switch(config)#interface vlan 200</code> <code>switch(config-if-Vl200)#isis hello-multiplier 4</code> <code>switch(config-if-Vl200)#</code></div></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1685.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1447.</div>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Step 9 <code>route-reflector-client</code></p> <p>Example: <code>switch(config-router-neighbor-af) # route-reflector-client</code></p> <p>Configures the device as a BGP route reflector and configures the neighbor as its client. This command triggers an automatic notification and session reset for the BGP neighbor sessions.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 6.x (2013), at 11-33.</p>	<p>A route reflector is configured to re-advertise routes learned through IBGP to a group of BGP neighbors within the AS (its clients), eliminating the need for a fully meshed topology. The <code>neighbor route-reflector-client</code> command configures the switch to act as a route reflector and configures the specified neighbor as one of its clients. The <code>bgp client-to-client reflection</code> command enables client-to-client reflection.</p> <p>When using route reflectors, an AS is divided into clusters. A cluster consists of one or more route reflectors and a group of clients to which they re-advertise route information. Multiple route reflectors can be configured in the same cluster to increase redundancy and avoid a single point of failure. Each route reflector has a cluster ID. If the cluster has a single route reflector, the cluster ID is its router ID. If a cluster has multiple route reflectors, a 4-byte cluster ID is assigned to all route reflectors in the cluster. All of them must be configured with the same cluster ID so that they can recognize updates from other route reflectors in the same cluster. The <code>bgp cluster-id</code> command configures the cluster ID in a cluster with multiple route reflectors.</p> <p>Example</p> <ul style="list-style-type: none"> These commands configure the switch as a route reflector and the neighbor at 101.72.14.5 as one of its clients, and set the cluster ID to 172.22.30.101. <pre>switch(config-router-bgp) #neighbor 101.72.14.5 route-reflector-client switch(config-router-bgp) #bgp cluster-id 172.22.30.101 switch(config-router-bgp) #</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1549.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1331; Arista User Manual, v. 4.11.1 (1/11/13), at 1081; Arista User Manual v. 4.10.3 (10/22/12), at 893; Arista User Manual v. 4.9.3.2 (5/3/12), at 665.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Static routes have a default administrative distance of 1. A router prefers a static route to a dynamic route because the router considers a route with a low number to be the shortest. If you want a dynamic route to override a static route, you can specify an administrative distance for the static route. For example, if you have two dynamic routes with an administrative distance of 120, you would specify an administrative distance that is greater than 120 for the static route if you want the dynamic route to override the static route.</p> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 6.x (2013), at 13-2.</p>	<p>Static routes have a default administrative distance of 1. Static routes with a higher administrative distance may be overridden by dynamic routing. For example, a static route with a distance of 200 is overridden by default OSPF intra-area routes (distance of 110). Route maps use tags to filter routes.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1720.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1153; Arista User Manual, v. 4.11.1 (1/11/13), at 914; Arista User Manual v. 4.10.3 (10/22/12), at 683.</p>

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>clear ip igmp interface statistics</div><div>To clear the IGMP statistics for an interface, use the <code>clear ip igmp interface statistics</code> command.</div><div><code>clear ip igmp interface statistics</code> [<i>if-type if-number</i>]</div><div><table><tr><td>Syntax Description</td><td><i>if-type</i> (Optional) Interface type. For more information, use the question mark (?) online help function.</td></tr><tr><td></td><td><i>if-number</i> (Optional) Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.</td></tr></table></div><div><table><tr><td>Defaults</td><td>None</td></tr></table></div><div><table><tr><td>Command Modes</td><td>Any command mode</td></tr></table></div><div><table><tr><td>SupportedUserRoles</td><td>network-admin network-operator vdc-admin vdc-operator</td></tr></table></div><div><table><tr><td>Command History</td><td><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(3)</td><td>This command was introduced.</td></tr></table></td></tr></table></div><div><table><tr><td>Usage Guidelines</td><td>This command does not require a license.</td></tr></table></div><div><table><tr><td>Examples</td><td><div>This example shows how to clear IGMP statistics for an interface:</div><div><code>switch# clear ip igmp interface statistics ethernet 2/1</code> switch#</div></td></tr></table></div><div><table><tr><td>Related Commands</td><td><table><tr><th>Command</th><th>Description</th></tr><tr><td>show ip igmp interface</td><td>Displays information about IGMP interfaces.</td></tr></table></td></tr></table></div></div>	Syntax Description	<i>if-type</i> (Optional) Interface type. For more information, use the question mark (?) online help function.		<i>if-number</i> (Optional) Interface or subinterface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.	Defaults	None	Command Modes	Any command mode	SupportedUserRoles	network-admin network-operator vdc-admin vdc-operator	Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(3)</td><td>This command was introduced.</td></tr></table>	Release	Modification	4.0(3)	This command was introduced.	Usage Guidelines	This command does not require a license.	Examples	<div>This example shows how to clear IGMP statistics for an interface:</div> <div><code>switch# clear ip igmp interface statistics ethernet 2/1</code> switch#</div>	Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td>show ip igmp interface</td><td>Displays information about IGMP interfaces.</td></tr></table>	Command	Description	show ip igmp interface	Displays information about IGMP interfaces.	<div><div>clear ip igmp statistics</div><div>The <code>clear ip igmp statistics</code> command resets IGMP transmission statistic counters for the specified interface.</div><div><table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Privileged EXEC</td></tr></table></div><div><div>Command Syntax</div><div><code>clear ip igmp statistics</code> [<i>INTF_ID</i>]</div></div><div><div>Parameters</div><div><ul style="list-style-type: none"><i>INTF_ID</i> interface name. Options include:<ul style="list-style-type: none"><no parameter> all interfaces.interface ethernet <i>e_num</i> Ethernet interface specified by <i>e_num</i>.interface loopback <i>l_num</i> Loopback interface specified by <i>l_num</i>.interface management <i>m_num</i> Management interface specified by <i>m_num</i>.interface port-channel <i>p_num</i> Port-channel interface specified by <i>p_num</i>.interface vlan <i>v_num</i> VLAN interface specified by <i>v_num</i>.interface xlan <i>vx_num</i> VXLAN interface specified by <i>vx_num</i>.</div></div><div><div>Examples</div><div><ul style="list-style-type: none">This command resets IGMP transmission statistic counters on Ethernet 1 interface.<div><code>switch#clear ip igmp statistics interface ethernet 1</code> switch#</div></div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1794.</div></div>	Platform	all	Command Mode	Privileged EXEC
	Syntax Description	<i>if-type</i> (Optional) Interface type. For more information, use the question mark (?) online help function.																														
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>ip igmp snooping last-member-query-interval</div><div>To configure a query interval in which the software removes a group, use the <code>ip igmp snooping last-member-query-interval</code> command. To reset the query interval to the default, use the <code>no</code> form of this command.</div><div><div><code>ip igmp snooping last-member-query-interval [interval]</code></div><div><code>no ip igmp snooping last-member-query-interval [interval]</code></div></div><table><tr><td>Syntax Description</td><td><code>interval</code> Query interval in seconds. The range is from 1 to 25. The default is 1.</td></tr><tr><td>Defaults</td><td>The query interval is 1.</td></tr><tr><td>Command Modes</td><td>VLAN configuration (config-vlan) until Cisco NX-OS Release 5.1. Configure VLAN (config-vlan-config) since Cisco NS-OS Release 5.1(1). You cannot configure this command in the VLAN configuration mode in Cisco Release NX-OS 5.1 and higher.</td></tr><tr><td>SupportedUserRoles</td><td>network-admin vdc-admin</td></tr><tr><td>Command History</td><td><table><tr><th>Release</th><th>Modification</th></tr><tr><td>NX-OS 5.1(1)</td><td>The mode to configure this command on a VLAN changed to the configure VLAN mode (config-vlan-config)#. You can no longer configure this command in the VLAN configuration mode (config-vlan)#.</td></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></td></tr><tr><td>Usage Guidelines</td><td>This command does not require a license. See the Layer2 Command Reference Guide for information on entering the Configure VLAN mode by using the <code>vlan</code> configuration command.</td></tr><tr><td>Examples</td><td><div>This example shows how to configure a query interval in which the software removes a group: <pre>switch(config)# vlan configuration 10 switch(config-vlan-config)# ip igmp snooping last-member-query-interval 3 switch(config-vlan-config)#</pre></div><div>This example shows how to reset a query interval to the default: <pre>switch(config)# vlan configuration 10 switch(config-vlan-config)# no ip igmp snooping last-member-query-interval switch(config-vlan-config)#</pre></div></td></tr></table></div>	Syntax Description	<code>interval</code> Query interval in seconds. The range is from 1 to 25. The default is 1.	Defaults	The query interval is 1.	Command Modes	VLAN configuration (config-vlan) until Cisco NX-OS Release 5.1. Configure VLAN (config-vlan-config) since Cisco NS-OS Release 5.1(1). 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The <code>ip igmp startup-query-count</code> specifies the number of messages that are sent before the switch stops forwarding packets to the host.</div><div>If the switch does not receive a response after this period, it stops forwarding traffic to the host on behalf of the group, source, or channel.</div><div>The <code>no ip igmp last-member-query-interval</code> and default <code>ip igmp last-member-query-interval</code> commands reset the query interval to the default value of one second by removing the <code>ip igmp last-member-query-interval</code> command from <i>running-config</i>.</div><table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet Configuration Interface-Port-Channel Configuration Interface-VLAN Configuration</td></tr></table><div>Command Syntax<div><code>ip igmp last-member-query-interval period</code> <code>no ip igmp last-member-query-interval</code> <code>default ip igmp last-member-query-interval</code></div></div><div>Parameters<ul style="list-style-type: none"><code>period</code> transmission interval (deciseconds) between consecutive group-specific query messages. Value range: 10 (one second) to 317440 (8 hours, 49 minutes, 4 seconds). Default is 10 (one second).</div><div>Example<ul style="list-style-type: none">This command configures the last member query interval of 6 seconds for VLAN interface 4.<div><pre>switch(config)#interface vlan 4 switch(config-if-Vl4)#ip igmp last-member-query-interval 60 switch(config-if-Vl4)#</pre></div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1799.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1519; Arista User Manual, v. 4.11.1 (1/11/13), at 1216; Arista User Manual v. 4.10.3 (10/22/12), at 1000; Arista User Manual v. 4.9.3.2 (5/3/12), at 785.</div></div>	Platform	all	Command Mode	Interface-Ethernet Configuration Interface-Port-Channel Configuration Interface-VLAN Configuration
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Copyright Registration Information	Cisco	Arista																														
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>ip igmp snooping startup-query-count</div> <p>To configure the number of queries sent at startup, use the <code>ip igmp snooping startup-query-count</code> command. To return to the default settings, use the <code>no</code> form of this command.</p> <div><code>ip igmp snooping startup-query-count value</code></div> <div><code>no ip igmp snooping startup-query-count value</code></div> <table><tr><td>Syntax Description</td><td>value</td><td>Count value. The range is from 1 to 10.</td></tr><tr><td>Defaults</td><td colspan="2">None</td></tr><tr><td>Command Modes</td><td colspan="2">VLAN configuration (config-vlan)</td></tr><tr><td>SupportedUserRoles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>NX-OS 5.1(1)</td><td>This command was introduced.</td></tr><tr><td>Usage Guidelines</td><td colspan="2">This command does not require a license.</td></tr><tr><td>Examples</td><td colspan="2">This example shows how to configure the number of queries sent at startup: <code>switch(config)# vlan configuration 10</code> <code>switch(config-vlan-config)# ip igmp snooping startup-query-count 4</code> <code>switch(config-vlan-config)#</code></td></tr><tr><td>Related Commands</td><td>Command</td><td>Description</td></tr><tr><td></td><td>show ip igmp snooping</td><td>Displays IGMP snooping information.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Multicast Routing Command Reference (2013), at 104.</p>	Syntax Description	value	Count value. The range is from 1 to 10.	Defaults	None		Command Modes	VLAN configuration (config-vlan)		SupportedUserRoles	network-admin vdc-admin		Command History	Release	Modification		NX-OS 5.1(1)	This command was introduced.	Usage Guidelines	This command does not require a license.		Examples	This example shows how to configure the number of queries sent at startup: <code>switch(config)# vlan configuration 10</code> <code>switch(config-vlan-config)# ip igmp snooping startup-query-count 4</code> <code>switch(config-vlan-config)#</code>		Related Commands	Command	Description		show ip igmp snooping	Displays IGMP snooping information.	<div>ip igmp snooping querier startup-query-count</div> <p>The <code>ip igmp snooping querier startup-query-count</code> command configures the global <i>startup query count</i> value. The <i>startup query count</i> specifies the number of query messages that the querier sends on a VLAN during the <i>startup query interval</i> (<code>ip igmp snooping querier startup-query-interval</code>).</p> <p>When snooping is enabled, the group state is more quickly established by sending query messages at a higher frequency. The <i>startup-query-interval</i> and <i>startup-query-count</i> parameters define the startup period by defining the number of queries to be sent and transmission frequency for these messages.</p> <p>VLANs use the global <i>startup query count</i> value when they are not assigned a value (<code>ip igmp snooping vlan querier startup-query-count</code>). VLAN commands take precedence over the global value. The default global value is specified by the robustness variable (<code>ip igmp snooping robustness-variable</code>).</p> <p>The <code>no ip igmp snooping querier startup-query-count</code> and default <code>ip igmp snooping querier startup-query-count</code> commands restore the default <i>startup-query-count</i> value by removing the corresponding <code>ip igmp snooping querier startup-query-count</code> command from <i>running-config</i>.</p> <div>Platformall Command ModeGlobal Configuration</div> <div>Command Syntax</div> <div><code>ip igmp snooping querier startup-query-count number</code> <code>no ip igmp snooping querier startup-query-count</code> <code>default ip igmp snooping querier startup-query-count</code></div> <div>Parameters</div> <ul style="list-style-type: none"><i>number</i> global startup query count. Value ranges from 1 to 3. <div>Example</div> <ul style="list-style-type: none">These commands configure the global startup query count value of 2, then displays the status of the snooping querier. <div><code>switch(config)# ip igmp snooping querier startup-query-count 2</code> <code>switch(config)# show ip igmp snooping querier status</code> Global IGMP Querier status ----- admin state : Disabled source IP address : 0.0.0.0 query-interval (sec) : 125.0 max-response-time (sec) : 10.0 querier timeout (sec) : 255.0 last-member-query-interval (sec) : 1.0 last-member-query-count : 2 (robustness) startup-query-interval (sec) : 31.25 (query-interval/4) startup-query-count : 2 Vlan Admin IP Query Response Querier Operational Ver State Interval Time Timeout State ----- 1 Disabled 0.0.0.0 125.0 10.0 255.0 Non-Querier v2 100 Disabled 0.0.0.0 125.0 10.0 255.0 Non-Querier v2 101 Disabled 0.0.0.0 125.0 10.0 255.0 Non-Querier v2 <code>switch(config)#</code></div>
	Syntax Description	value	Count value. The range is from 1 to 10.																													
	Defaults	None																														
	Command Modes	VLAN configuration (config-vlan)																														
	SupportedUserRoles	network-admin vdc-admin																														
	Command History	Release	Modification																													
		NX-OS 5.1(1)	This command was introduced.																													
	Usage Guidelines	This command does not require a license.																														
	Examples	This example shows how to configure the number of queries sent at startup: <code>switch(config)# vlan configuration 10</code> <code>switch(config-vlan-config)# ip igmp snooping startup-query-count 4</code> <code>switch(config-vlan-config)#</code>																														
	Related Commands	Command	Description																													
	show ip igmp snooping	Displays IGMP snooping information.																														

Copyright Registration Information	Cisco	Arista																																																														
<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>ip igmp snooping startup-query-interval</div><div>To configure the query interval at startup, use the <code>ip igmp snooping startup-query-interval</code> command. To return to the default settings, use the <code>no</code> form of this command.</div><div><div>ip igmp snooping startup-query-interval sec</div><div>no ip igmp snooping startup-query-interval sec</div></div><table><tr><td>Syntax Description</td><td>sec</td><td>Interval in seconds. The range is from 1 to 18000.</td></tr><tr><td>Defaults</td><td colspan="2">None</td></tr><tr><td>Command Modes</td><td colspan="2">VLAN configuration (config-vlan)</td></tr><tr><td>SupportedUserRoles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>NX-OS 5.1(1)</td><td>This command was introduced.</td></tr><tr><td>Usage Guidelines</td><td colspan="2">This command does not require a license.</td></tr><tr><td>Examples</td><td colspan="2">This example shows how to configure the query interval at startup: <code>switch(config)# vlan configuration 10</code> <code>switch(config-vlan-config)# ip igmp snooping startup-query-interval 4</code> <code>switch(config-vlan-config)#</code></td></tr><tr><td>Related Commands</td><td>Command</td><td>Description</td></tr><tr><td></td><td>show ip igmp snooping</td><td>Displays IGMP snooping information.</td></tr></table><div>Cisco Nexus 7000 Series NX-OS Multicast Routing Command Reference (2013), at 105.</div></div>	Syntax Description	sec	Interval in seconds. The range is from 1 to 18000.	Defaults	None		Command Modes	VLAN configuration (config-vlan)		SupportedUserRoles	network-admin vdc-admin		Command History	Release	Modification		NX-OS 5.1(1)	This command was introduced.	Usage Guidelines	This command does not require a license.		Examples	This example shows how to configure the query interval at startup: <code>switch(config)# vlan configuration 10</code> <code>switch(config-vlan-config)# ip igmp snooping startup-query-interval 4</code> <code>switch(config-vlan-config)#</code>		Related Commands	Command	Description		show ip igmp snooping	Displays IGMP snooping information.	<div><div>ip igmp snooping querier startup-query-interval</div><div>The <code>ip igmp snooping querier startup-query-interval</code> command configures the global startup query interval value. The <i>startup query interval</i> specifies the period between query messages that the querier sends upon startup.</div><div>When snooping is enabled, the group state is more quickly established by sending query messages at a higher frequency. The <i>startup-query-interval</i> and <i>startup-query-count</i> parameters define the startup period by defining the number of queries to be sent and transmission frequency for these messages.</div><div>VLANs use the global <i>startup query interval</i> value when they are not assigned a value (<code>ip igmp snooping vlan querier startup-query-interval</code>). VLAN commands take precedence over the global value. The default global value equals the query interval divided by four: (<code>ip igmp snooping querier query-interval</code>).</div><div>The <code>no ip igmp snooping querier startup-query-interval</code> and default <code>ip igmp snooping querier startup-query-interval</code> commands restore the default method of specifying the startup query interval by removing the corresponding <code>ip igmp snooping querier startup-query-interval</code> command from <i>running-config</i>.</div><div><div>Platform</div><div>all</div><div>Command Mode</div><div>Global Configuration</div></div><div>Command Syntax</div><div><div>ip igmp snooping querier startup-query-interval period</div><div>no ip igmp snooping querier startup-query-interval</div><div>default ip igmp snooping querier startup-query-interval</div></div><div>Parameters</div><div><div><div>•</div><div>period</div><div>startup query interval (seconds). Value ranges from 1 to 3600 (1 hour).</div></div></div><div>Example</div><div><div><div>•</div><div>This command configures the startup query count of one minute for VLAN interface 4.</div></div></div><div><div>switch(config)#ip igmp snooping querier startup-query-interval 40</div><div>switch(config)#show ip igmp snooping querier status</div><div>Global IGMP Querier status</div><div>-----</div><div>admin state : Enabled</div><div>source IP address : 0.0.0.0</div><div>query-interval (sec) : 125.0</div><div>max-response-time (sec) : 10.0</div><div>querier timeout (sec) : 255.0</div><div>last-member-query-interval (sec) : 1.0</div><div>last-member-query-count : 2 (robustness)</div><div>startup-query-interval (sec) : 40.0</div><div>startup-query-count : 2</div><div></div><table><tr><th>Vlan</th><th>Admin State</th><th>IP</th><th>Query Interval</th><th>Response Time</th><th>Querier Timeout</th><th>Operational State</th><th>Ver</th></tr><tr><td>1</td><td>Enabled</td><td>0.0.0.0</td><td>125.0</td><td>10.0</td><td>255.0</td><td>Non-Querier</td><td>v3</td></tr><tr><td>100</td><td>Enabled</td><td>0.0.0.0</td><td>125.0</td><td>10.0</td><td>255.0</td><td>Non-Querier</td><td>v3</td></tr><tr><td>101</td><td>Enabled</td><td>0.0.0.0</td><td>125.0</td><td>10.0</td><td>255.0</td><td>Non-Querier</td><td>v3</td></tr></table><div>switch(config)#</div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1813.</div></div>	Vlan	Admin State	IP	Query Interval	Response Time	Querier Timeout	Operational State	Ver	1	Enabled	0.0.0.0	125.0	10.0	255.0	Non-Querier	v3	100	Enabled	0.0.0.0	125.0	10.0	255.0	Non-Querier	v3	101	Enabled	0.0.0.0	125.0	10.0	255.0	Non-Querier	v3
	Syntax Description	sec	Interval in seconds. The range is from 1 to 18000.																																																													
Defaults	None																																																															
Command Modes	VLAN configuration (config-vlan)																																																															
SupportedUserRoles	network-admin vdc-admin																																																															
Command History	Release	Modification																																																														
	NX-OS 5.1(1)	This command was introduced.																																																														
Usage Guidelines	This command does not require a license.																																																															
Examples	This example shows how to configure the query interval at startup: <code>switch(config)# vlan configuration 10</code> <code>switch(config-vlan-config)# ip igmp snooping startup-query-interval 4</code> <code>switch(config-vlan-config)#</code>																																																															
Related Commands	Command	Description																																																														
	show ip igmp snooping	Displays IGMP snooping information.																																																														
Vlan	Admin State	IP	Query Interval	Response Time	Querier Timeout	Operational State	Ver																																																									
1	Enabled	0.0.0.0	125.0	10.0	255.0	Non-Querier	v3																																																									
100	Enabled	0.0.0.0	125.0	10.0	255.0	Non-Querier	v3																																																									
101	Enabled	0.0.0.0	125.0	10.0	255.0	Non-Querier	v3																																																									

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div><div>ip igmp snooping version</div><div>To configure the IGMP version number for VLAN, use the ip igmp snooping version command. To return to the default settings, use the no form of this command.</div><div><div>ip igmp snooping version value</div><div>no ip igmp snooping version value</div></div></div><table><tr><td>Syntax Description</td><td>value</td><td>Version number value. The range is from 2 to 3.</td></tr><tr><td>Defaults</td><td colspan="2">None</td></tr><tr><td>Command Modes</td><td colspan="2">VLAN configuration (config-vlan)</td></tr><tr><td>SupportedUserRoles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>5.1(1)</td><td>This command was introduced.</td></tr><tr><td>Usage Guidelines</td><td colspan="2">This command does not require a license.</td></tr><tr><td>Examples</td><td colspan="2">This example shows how to configure IGMP version number for VLAN:<div>switch(config-vlan-config)# ip igmp snooping version 3 switch(config-vlan-config)#</div></td></tr><tr><td>Related Commands</td><td>Command</td><td>Description</td></tr><tr><td></td><td>show ip igmp snooping</td><td>Displays IGMP snooping information.</td></tr></table><div>Cisco Nexus 7000 Series NX-OS Multicast Routing Command Reference (2013), at 108.</div></div>	Syntax Description	value	Version number value. The range is from 2 to 3.	Defaults	None		Command Modes	VLAN configuration (config-vlan)		SupportedUserRoles	network-admin vdc-admin		Command History	Release	Modification		5.1(1)	This command was introduced.	Usage Guidelines	This command does not require a license.		Examples	This example shows how to configure IGMP version number for VLAN: <div>switch(config-vlan-config)# ip igmp snooping version 3 switch(config-vlan-config)#</div>		Related Commands	Command	Description		show ip igmp snooping	Displays IGMP snooping information.	<div><div><div>ip igmp snooping querier version</div><div>The ip igmp snooping querier version command configures the Internet Group Management Protocol (IGMP) snooping querier version on the configuration mode interfaces. Version 3 is the default IGMP version.</div><div>IGMP is enabled by the ip pim sparse-mode command. The ig igmp snooping querier version command does not affect the IGMP enabled status.</div><div>The no ip igmp snooping querier version and default ip igmp snooping querier version commands restore the configuration mode to IGMP version 3 by removing the ip igmp snooping querier version statement from running-config.</div><div><div>Platformall</div><div>Command ModeGlobal Configuration</div></div><div>Command Syntax<div><div>ip igmp snooping querier version version_number</div><div>no ip igmp snooping querier version</div><div>default ip igmp snooping querier version</div></div></div><div>Parameters<ul style="list-style-type: none">version_numberIGMP version number. Value ranges from 1 to 3. Default value is 3.</div><div>Example<ul style="list-style-type: none">This command configures IGMP snooping querier version 2.<div>switch(config)#ip igmp snooping querier version 2 switch(config)#</div>This command restores the IGMP snooping querier to version 2.<div>switch(config)# no ip igmp snooping querier version switch(config)#</div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1815.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1531.</div></div></div>
	Syntax Description	value	Version number value. The range is from 2 to 3.																													
Defaults	None																															
Command Modes	VLAN configuration (config-vlan)																															
SupportedUserRoles	network-admin vdc-admin																															
Command History	Release	Modification																														
	5.1(1)	This command was introduced.																														
Usage Guidelines	This command does not require a license.																															
Examples	This example shows how to configure IGMP version number for VLAN: <div>switch(config-vlan-config)# ip igmp snooping version 3 switch(config-vlan-config)#</div>																															
Related Commands	Command	Description																														
	show ip igmp snooping	Displays IGMP snooping information.																														

Copyright Registration Information	Cisco	Arista																																				
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to display information about IGMP snooping queriers:</div> <div><pre>switch(config)# show ip igmp snooping querier</pre><table><tr><th>Vlan</th><th>IP Address</th><th>Version</th><th>Port</th></tr><tr><td>1</td><td>172.20.50.11</td><td>v3</td><td>fa2/1</td></tr><tr><td>2</td><td>172.20.40.20</td><td>v2</td><td>Router</td></tr></table><pre>switch(config)#</pre></div> <div>Cisco Nexus 7000 Series NX-OS Multicast Routing Command Reference (2013), at 50.</div>	Vlan	IP Address	Version	Port	1	172.20.50.11	v3	fa2/1	2	172.20.40.20	v2	Router	<div>Example</div> <div><ul style="list-style-type: none">This command displays the querier IP address, version, and port servicing each VLAN.</div> <div><pre>switch>show ip igmp snooping querier</pre><table><tr><th>Vlan</th><th>IP Address</th><th>Version</th><th>Port</th></tr><tr><td colspan="4">-----</td></tr><tr><td>1</td><td>172.17.0.37</td><td>v2</td><td>Pol</td></tr><tr><td>20</td><td>172.17.20.1</td><td>v2</td><td>Pol</td></tr><tr><td>26</td><td>172.17.26.1</td><td>v2</td><td>Cpu</td></tr><tr><td>2028</td><td>172.17.255.29</td><td>v2</td><td>Pol</td></tr></table><pre>switch></pre></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1860.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1568; Arista User Manual, v. 4.11.1 (1/11/13), at 1263; Arista User Manual v. 4.10.3 (10/22/12), at 1074; Arista User Manual v. 4.9.3.2 (5/3/12), at 831; Arista User Manual v. 4.8.2 (11/18/11), at 637.</div>	Vlan	IP Address	Version	Port	-----				1	172.17.0.37	v2	Pol	20	172.17.20.1	v2	Pol	26	172.17.26.1	v2	Cpu	2028	172.17.255.29	v2	Pol
	Vlan	IP Address	Version	Port																																		
1	172.20.50.11	v3	fa2/1																																			
2	172.20.40.20	v2	Router																																			
Vlan	IP Address	Version	Port																																			

1	172.17.0.37	v2	Pol																																			
20	172.17.20.1	v2	Pol																																			
26	172.17.26.1	v2	Cpu																																			
2028	172.17.255.29	v2	Pol																																			

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>aaa group server tacacs+</div><div>To create a TACACS+ server group and enter TACACS+ server group configuration mode, use the <code>aaa group server tacacs+</code> command. To delete a TACACS+ server group, use the <code>no</code> form of this command.</div><div>aaa group server tacacs+ group-name</div><div>no aaa group server tacacs+ group-name</div></div> <table><tr><td>Syntax Description</td><td>group-name</td><td>TACACS+ server group name. The name is alphanumeric and case-sensitive. The maximum length is 64 characters.</td></tr><tr><td>Defaults</td><td colspan="2">None</td></tr><tr><td>Command Modes</td><td colspan="2">Global configuration</td></tr><tr><td>SupportedUserRoles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>4.0(1)</td><td>This command was introduced.</td></tr><tr><td>Usage Guidelines</td><td colspan="2">You must use the <code>feature tacacs+</code> command before you configure TACACS+. This command does not require a license.</td></tr><tr><td>Examples</td><td colspan="2"><div>This example shows how to create a TACACS+ server group and enter TACACS+ server configuration mode:</div><div>switch# configure terminal switch(config)# aaa group server tacacs+ TacServer switch(config-radius)#</div><div>This example shows how to delete a TACACS+ server group:</div><div>switch# configure terminal switch(config)# no aaa group server tacacs+ TacServer</div></td></tr></table> <div>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-34.</div>	Syntax Description	group-name	TACACS+ server group name. The name is alphanumeric and case-sensitive. The maximum length is 64 characters.	Defaults	None		Command Modes	Global configuration		SupportedUserRoles	network-admin vdc-admin		Command History	Release	Modification		4.0(1)	This command was introduced.	Usage Guidelines	You must use the <code>feature tacacs+</code> command before you configure TACACS+. This command does not require a license.		Examples	<div>This example shows how to create a TACACS+ server group and enter TACACS+ server configuration mode:</div> <div>switch# configure terminal switch(config)# aaa group server tacacs+ TacServer switch(config-radius)#</div> <div>This example shows how to delete a TACACS+ server group:</div> <div>switch# configure terminal switch(config)# no aaa group server tacacs+ TacServer</div>		<div><div>aaa group server tacacs+</div><div>The <code>aaa group server tacacs+</code> command enters <code>server-group-tacacs+</code> configuration mode for the specified group name. The command creates the specified group if it was not previously created. Commands are available to add servers to the group.</div><div>A server group is a collection of servers that are associated with a single label. Subsequent authorization and authentication commands access all servers in a group by invoking the group name. Server group members must be previously configured with a <code>tacacs-server host</code> command.</div><div>The <code>no aaa group server tacacs+</code> and default <code>aaa group server tacacs+</code> commands delete the specified server group from <i>running-config</i>.</div><div>Platformall Command ModeGlobal Configuration</div><div>Command Syntax</div><div>aaa group server tacacs+ group_name no aaa group server tacacs+ group_name default aaa group server tacacs+ group_name</div><div>Parameters</div><div><ul style="list-style-type: none"><code>group_name</code> name (text string) assigned to the group. Cannot be identical to a name already assigned to a RADIUS server group.</div><div>Commands Available in <code>server-group-tacacs+</code> Configuration Mode</div><div><ul style="list-style-type: none"><code>server (server-group-TACACS+ configuration mode)</code></div><div>Related Commands</div><div><ul style="list-style-type: none"><code>aaa group server radius</code></div><div>Example</div><div><ul style="list-style-type: none">This command creates the TACACS+ server group named TAC-GR and enters server group configuration mode for the new group.</div><div>switch(config)#aaa group server tacacs+ TAC-GR switch(config-sg-tacacs+-TAC-GR)#</div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 225.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 169; Arista User Manual, v. 4.11.1 (1/11/13), at 127; Arista User Manual v. 4.10.3 (10/22/12), at 119.</div></div>
	Syntax Description	group-name	TACACS+ server group name. The name is alphanumeric and case-sensitive. The maximum length is 64 characters.																							
Defaults	None																									
Command Modes	Global configuration																									
SupportedUserRoles	network-admin vdc-admin																									
Command History	Release	Modification																								
	4.0(1)	This command was introduced.																								
Usage Guidelines	You must use the <code>feature tacacs+</code> command before you configure TACACS+. This command does not require a license.																									
Examples	<div>This example shows how to create a TACACS+ server group and enter TACACS+ server configuration mode:</div> <div>switch# configure terminal switch(config)# aaa group server tacacs+ TacServer switch(config-radius)#</div> <div>This example shows how to delete a TACACS+ server group:</div> <div>switch# configure terminal switch(config)# no aaa group server tacacs+ TacServer</div>																									

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>dot1x pae authenticator</div><div>To create the 802.1X authenticator port access entity (PAE) role for an interface, use the dot1x pae authenticator command. To remove the 802.1X authenticator PAE role, use the no form of this command.</div><div><div>dot1x pae authenticator</div><div>no dot1x pae authenticator</div></div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>802.1X automatically creates the authenticator PAE when you enable the feature on an interface.</div></div><div><div>Command Modes</div><div>Interface configuration</div></div><div><div>SupportedUserRoles</div><div>network-admin vdc-admin</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.2(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div><p>You must use the feature dot1x command before you configure 802.1X.</p><p>When you enable 802.1X on an interface, the Cisco NX-OS software creates an authenticator port access entity (PAE) instance. An authenticator PAE is a protocol entity that supports authentication on the interface. When you disable 802.1X on the interface, the Cisco NX-OS software does not automatically clear the authenticator PAE instances. You can explicitly remove the authenticator PAE from the interface and then reapply it, as needed.</p><p>This command does not require a license.</p></div></div><div><div>Examples</div><div><p>This example shows how to create the 802.1X authenticator PAE role on an interface:</p><pre>switch# configure terminal switch(config)# interface ethernet 2/4 switch(config-if)# dot1x pae authenticator</pre><p>This example shows how to remove the 802.1X authenticator PAE role from an interface:</p><pre>switch# configure terminal switch(config)# interface ethernet 2/4 switch(config-if)# no dot1x pae authenticator</pre></div></div></div>	Release	Modification	4.2(1)	This command was introduced.	<div><div>dot1x pae authenticator</div><div>The dot1x pae authenticator command sets the Port Access Entity (PAE) type. The interface acts only as an authenticator and will not respond to any messages meant for a supplicant.</div><div>The no dot1x pae authenticator and default dot1x pae authenticator commands restore the switch default by deleting the corresponding dot1x pae authenticator command from <i>running-config</i>.</div><div><div>Platform</div><div>all</div></div><div><div>Command Mode</div><div>Interface-Ethernet Configuration Interface-Management Configuration</div></div><div><div>Command Syntax</div><div><div>dot1x pae authenticator</div><div>no dot1x pae authenticator</div><div>default dot1x pae authenticator</div></div></div><div><div>Example</div><div><ul style="list-style-type: none">This command configures the port as an IEEE 802.1x port access entity (PAE) authenticator, which enables IEEE 802.1x on the port but does not allow clients connected to the port to be authorized, use the dot1x pae authenticator interface configuration command.<pre>switch(config-if-Et1)#interface ethernet 2 switch(config-if-Et1)#dot1x pae authenticator switch(config-if-Et1)#</pre><ul style="list-style-type: none">This example shows how to disable IEEE 802.1x authentication on the port.<pre>switch(config-if-Et1)#interface ethernet 2 switch(config-if-Et1)#no dot1x pae authenticator switch(config-if-Et1)#</pre></div></div></div>
	Release	Modification				
4.2(1)	This command was introduced.					
<div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 566.</div>						

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>dot1x timeout quiet-period</div><div>To configure the 802.1X quiet-period timeout globally or for an interface, use the dot1x timeout quiet-period command. To revert to the default, use the no form of this command.</div><div><div>dot1x timeout quiet-period seconds</div><div>no dot1x timeout quiet-period</div></div><div><div>Syntax Description</div><div>secondsNumber of seconds for the 802.1X quiet-period timeout. The range is from 1 to 65535.</div></div><div><div>Defaults</div><div>Global configuration: 60 seconds Interface configuration: The value of the global configuration</div></div><div><div>Command Modes</div><div>Global configuration Interface configuration</div></div><div><div>SupportedUserRoles</div><div>network-admin vdc-admin</div></div><div><div>Command History</div><div><div>Release</div><div>Modification</div><div>4.0(1)</div><div>This command was introduced.</div></div></div><div><div>Usage Guidelines</div><div>The 802.1X quiet-period timeout is the number of seconds that the device remains in the quiet state following a failed authentication exchange with a supplicant. You must use the feature dot1x command before you configure 802.1X.</div><div><div>Note</div><div>You should change the default value only to adjust for unusual circumstances, such as unreliable links or specific behavioral problems with certain supplicants and authentication servers.</div><div>This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to configure the global 802.1X quiet-period timeout: switch# configure terminal switch(config)# dot1x timeout quiet-period 45</div></div></div></div>	<div><div>dot1x timeout quiet-period</div><div>The dot1x timeout quiet-period command sets the number of seconds that the switch remains in the quiet state following a failed authentication exchange with the client. The range is 1 to 65535 seconds; the default is 60.</div><div>When the switch cannot authenticate the client, the switch remains idle for a set period of time and then tries again. You can provide a faster response time to the user by entering a number smaller than the default.</div><div>The no dot1x timeout quiet-period and default dot1x timeout quiet-period commands restore the default advertisement interval of 60 seconds by removing the corresponding dot1x timeout quiet-period command from running-config.</div><div><div>Platform</div><div>all</div><div>Command Mode</div><div>Interface-Ethernet Configuration Interface-Management Configuration</div></div><div><div>Command Syntax</div><div><div>dot1x timeout quiet-period quiet_time</div><div>no dot1x timeout quiet-period</div><div>default dot1x timeout quiet-period</div></div><div><div>Parameters</div><div><div>quiet_time</div><div>advertisement interval (seconds). Values range from 1 to 65535. Default value is 60.</div></div><div><div>Example</div><div>This command sets the number of seconds that an authenticator port waits after a failed authentication with a client before accepting authentication requests again.</div><div><div>switch(config)#interface Ethernet 1</div><div>switch(config-if-Et1)#dot1x timeout quiet-period 600</div><div>switch(config-if-Et1)#</div></div></div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 569.</div></div></div></div>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>To use this command, you must enable the DHCP snooping feature (see the feature dhcp command). You can configure up to four DHCP server IP addresses on Layer 3 Ethernet interfaces and subinterfaces, VLAN interfaces, and Layer 3 port channels. In Cisco NX-OS Release 4.0.2 and earlier releases, you can configure only one DHCP server IP address on an interface.</p> <p>When an inbound DHCP BOOTREQUEST packet arrives on the interface, <u>the relay agent forwards the packet to all DHCP server IP addresses specified on that interface. The relay agent forwards replies from all DHCP servers to the host that sent the request.</u></p> <p>This command does not require a license.</p> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-309.</p>	<p>The ip dhcp snooping information option command enables the insertion of option-82 DHCP snooping information in DHCP packets on VLANs where DHCP snooping is enabled. DHCP snooping is a layer 2 switch process that allows relay agents to provide remote-ID and circuit-ID information to DHCP reply and request packets. DHCP servers use this information to determine the originating port of DHCP requests and associate a corresponding IP address to that port.</p> <p>DHCP snooping uses information option (Option-82) to include the switch MAC address (router-ID) along with the physical interface name and <u>VLAN number (circuit-ID)</u> in DHCP packets. After adding the information to the packet, <u>the DHCP relay agent forwards the packet to the DHCP server</u> through DHCP protocol processes.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1270.</p>

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>ip dhcp relay information option</div><div>To enable the device to insert and remove option-82 information on DHCP packets forwarded by the relay agent, use the <code>ip dhcp relay information option</code> command. To disable the insertion and removal of option-82 information, use the <code>no</code> form of this command.</div><div><div>ip dhcp relay information option</div><div>no ip dhcp relay information option</div></div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>By default, the device does not insert and remove option-82 information on DHCP packets forwarded by the relay agent.</div></div><div><div>Command Modes</div><div>Global configuration</div></div><div><div>SupportedUserRoles</div><div>network-admin vdc-admin</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>To use this command, you must enable the DHCP snooping feature (see the <code>feature dhcp</code> command). This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to enable the DHCP relay agent to insert and remove option-82 information to and from packets it forwards: <pre>switch# configure terminal switch(config)# ip dhcp relay information option switch(config)#</pre></div></div><div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>ip dhcp relay</td><td>Enables or disables the DHCP relay agent.</td></tr><tr><td>ip dhcp relay address</td><td>Configures the IP address of a DHCP server on an interface.</td></tr><tr><td>ip dhcp relay sub-option type cisco</td><td>Enables DHCP to use Cisco proprietary numbers 150, 152, and 151 when filling the link selection, server ID override, and VRF name/VPN ID relay agent option-82 suboptions.</td></tr><tr><td>ip dhcp snooping</td><td>Globally enables DHCP snooping on the device.</td></tr></table></div></div>	Release	Modification	4.0(1)	This command was introduced.	Command	Description	ip dhcp relay	Enables or disables the DHCP relay agent.	ip dhcp relay address	Configures the IP address of a DHCP server on an interface.	ip dhcp relay sub-option type cisco	Enables DHCP to use Cisco proprietary numbers 150, 152, and 151 when filling the link selection, server ID override, and VRF name/VPN ID relay agent option-82 suboptions.	ip dhcp snooping	Globally enables DHCP snooping on the device.	<div><div>ip dhcp relay information option (Global)</div><div>The <code>ip dhcp relay information option</code> command configures the switch to attach tags to DHCP requests before forwarding them to the DHCP servers designated by <code>ip helper-address</code> commands. The <code>ip dhcp relay information option circuit-id</code> command specifies the tag contents for packets forwarded by the interface that it configures.</div><div>The <code>no ip dhcp relay information option</code> and default <code>ip dhcp relay information option</code> commands restore the switch's default setting of not attaching tags to DHCP requests by removing the <code>ip dhcp relay information option</code> command from <i>running-config</i>.</div><div><div>Platform</div><div>all</div></div><div><div>Command Mode</div><div>Global Configuration</div></div><div><div>Command Syntax</div><div><div>ip dhcp relay information option</div><div>no ip dhcp relay information option</div><div>default ip dhcp relay information option</div></div></div><div><div>Related Commands</div><div>These commands implement DHCP relay agent.</div><div><ul style="list-style-type: none">ip helper-addressip dhcp relay always-onip dhcp relay information option circuit-id</div></div><div><div>Example</div><div><ul style="list-style-type: none">This command enables the attachment of tags to DHCP requests that are forwarded to DHCP server addresses.<pre>switch(config)#ip dhcp relay information option switch(config)#</pre></div></div><div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1264.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 1068; Arista User Manual, v. 4.11.1 (1/11/13), at 852; Arista User Manual v. 4.10.3 (10/22/12), at 701.</div></div></div>
	Release	Modification														
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Command	Description															
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ip dhcp snooping	Globally enables DHCP snooping on the device.															

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Related Commands</th><th>Command</th><th>Description</th></tr><tr><td></td><td>ip dhcp relay</td><td>Enables or disables the DHCP relay agent.</td></tr><tr><td></td><td>ip dhcp relay address</td><td>Configures the IP address of a DHCP server on an interface.</td></tr><tr><td></td><td>ip dhcp relay sub-option type cisco</td><td>Enables DHCP to use Cisco proprietary numbers 150, 152, and 151 when filling the link selection, server ID override, and VRF name/VPN ID relay agent option-82 suboptions.</td></tr><tr><td></td><td>ip dhcp snooping</td><td>Globally enables DHCP snooping on the device.</td></tr></table> Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-311.	Related Commands	Command	Description		ip dhcp relay	Enables or disables the DHCP relay agent.		ip dhcp relay address	Configures the IP address of a DHCP server on an interface.		ip dhcp relay sub-option type cisco	Enables DHCP to use Cisco proprietary numbers 150, 152, and 151 when filling the link selection, server ID override, and VRF name/VPN ID relay agent option-82 suboptions.		ip dhcp snooping	Globally enables DHCP snooping on the device.	Related Commands <ul style="list-style-type: none">• ip dhcp snooping globally enables DHCP snooping.• ip dhcp snooping vlan enables DHCP snooping on specified VLANs.• ip helper-address enables the DHCP relay agent on a configuration mode interface. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1270.
Related Commands	Command	Description															
	ip dhcp relay	Enables or disables the DHCP relay agent.															
	ip dhcp relay address	Configures the IP address of a DHCP server on an interface.															
	ip dhcp relay sub-option type cisco	Enables DHCP to use Cisco proprietary numbers 150, 152, and 151 when filling the link selection, server ID override, and VRF name/VPN ID relay agent option-82 suboptions.															
	ip dhcp snooping	Globally enables DHCP snooping on the device.															
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	Examples This example shows how to enable VRF support for the DHCP relay agent, which is dependent upon enabling Option-82 support for the DHCP relay agent, and how to configure a DHCP server address on a Layer 3 interface when the DHCP server is in a VRF named SiteA: switch# configure terminal switch(config)# ip dhcp relay information option switch(config)# ip dhcp relay information option vpn switch(config)# interface ethernet 1/3 switch(config-if)# ip dhcp relay address 10.43.87.132 use-vrf SiteA switch(config-if)# Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-314.	Example <ul style="list-style-type: none">• This command enables the attachment of tags to DHCP requests that are forwarded to DHCP server addresses. switch(config)#ip dhcp relay information option switch(config)# Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1237. See also Arista User Manual v. 4.12.3 (7/17/13), at 1068; Arista User Manual, v. 4.11.1 (1/11/13), at 852; Arista User Manual v. 4.10.3 (10/22/12), at 688.															
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>feature dhcp</td><td>Enables the DHCP snooping feature on the device.</td></tr><tr><td>ip dhcp relay</td><td>Enables the DHCP relay agent.</td></tr><tr><td>ip dhcp relay address</td><td>Configures an IP address of a DHCP server on an interface.</td></tr><tr><td>ip dhcp relay information option</td><td>Enables the insertion and removal of option-82 information from DHCP packets forwarded by the DHCP relay agent.</td></tr><tr><td>ip dhcp snooping</td><td>Globally enables DHCP snooping on the device.</td></tr></table> Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-317.	Command	Description	feature dhcp	Enables the DHCP snooping feature on the device.	ip dhcp relay	Enables the DHCP relay agent.	ip dhcp relay address	Configures an IP address of a DHCP server on an interface.	ip dhcp relay information option	Enables the insertion and removal of option-82 information from DHCP packets forwarded by the DHCP relay agent.	ip dhcp snooping	Globally enables DHCP snooping on the device.	Example <ul style="list-style-type: none">• This command enables the DHCP relay agent. switch(config)#ip dhcp relay always-on switch(config)# Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1263. See also Arista User Manual v. 4.12.3 (7/17/13), at 1047; Arista User Manual, v. 4.11.1 (1/11/13), at 890; Arista User Manual v. 4.10.3 (10/22/12), at 688.			
Command	Description																
feature dhcp	Enables the DHCP snooping feature on the device.																
ip dhcp relay	Enables the DHCP relay agent.																
ip dhcp relay address	Configures an IP address of a DHCP server on an interface.																
ip dhcp relay information option	Enables the insertion and removal of option-82 information from DHCP packets forwarded by the DHCP relay agent.																
ip dhcp snooping	Globally enables DHCP snooping on the device.																

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>ip dhcp smart-relay</div> <p>To enable Dynamic Host Configuration Protocol (DHCP) smart relay on a Layer 3 interface, use the <code>ip dhcp smart-relay</code> command. To disable DHCP smart relay on a Layer 3 interface, use the <code>no</code> form of this command.</p> <div>ip dhcp smart-relay</div> <div>no ip dhcp smart-relay</div> <div>Syntax Description</div> <p>This command has no arguments or keywords.</p> <div>Defaults</div> <p>Disabled</p> <div>Command Modes</div> <p>Interface configuration mode (config-if)</p> <div>SupportedUserRoles</div> <p>network-admin vdc-admin</p> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-319.</p>	<div>ip dhcp smart-relay</div> <p>The <code>ip dhcp smart-relay</code> command configures the DHCP smart relay status on the configuration mode interface. DHCP smart relay supports forwarding DHCP requests with a client’s secondary IP addresses in the gateway address field. Enabling DHCP smart relay on an interface requires that DHCP relay is also enabled on that interface.</p> <p>By default, an interface assumes the global DHCP smart relay setting as configured by the <code>ip dhcp smart-relay global</code> command. The <code>ip dhcp smart-relay</code> command, when configured, takes precedence over the global smart relay setting.</p> <p>The <code>no ip dhcp smart-relay</code> command disables DHCP smart relay on the configuration mode interface. The default <code>ip dhcp smart-relay</code> command restores the interface’s to the default DHCP smart relay setting, as configured by the <code>ip dhcp smart-relay global</code> command, by removing the corresponding <code>ip dhcp smart-relay</code> or <code>no ip dhcp smart-relay</code> statement from <i>running-config</i>.</p> <div>Platform</div> <p>all</p> <div>Command Mode</div> <p>Interface-Ethernet Configuration Interface-Port-channel Configuration Interface-VLAN Configuration</p> <div>Command Syntax</div> <div>ip dhcp smart-relay</div> <div>no ip dhcp smart-relay</div> <div>default ip dhcp smart-relay</div> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1266.</p>						
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Related Commands</div> <table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>ip dhcp smart-relay</td><td>Enables DHCP smart relay on a Layer 3 interface.</td></tr><tr><td>ip dhcp relay</td><td>Enable the DHCP relay agent.</td></tr></tbody></table> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-322.</p>	Command	Description	ip dhcp smart-relay	Enables DHCP smart relay on a Layer 3 interface.	ip dhcp relay	Enable the DHCP relay agent.	<div>Related Commands</div> <ul style="list-style-type: none"><code>ip helper-address</code> enables the DHCP relay agent on a configuration mode interface.<code>ip dhcp smart-relay</code> enables the DHCP smart relay agent on a configuration mode interface. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1268.</p>
Command	Description							
ip dhcp smart-relay	Enables DHCP smart relay on a Layer 3 interface.							
ip dhcp relay	Enable the DHCP relay agent.							

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to globally enable DHCP snooping:</div> <div>switch# configure terminal switch(config)# ip dhcp snooping switch(config)#</div> <div>Related Commands</div> <table><thead><tr><th>Command</th><th>Description</th></tr></thead><tbody><tr><td>feature dhcp</td><td>Enables the DHCP snooping feature on the device.</td></tr><tr><td>ip dhcp relay</td><td>Enables or disables the DHCP relay agent.</td></tr><tr><td>ip dhcp snooping information option</td><td>Enables the insertion and removal of option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.</td></tr><tr><td>ip dhcp snooping trust</td><td>Configures an interface as a trusted source of DHCP messages.</td></tr><tr><td>ip dhcp snooping vlan</td><td>Enables DHCP snooping on the specified VLANs.</td></tr></tbody></table>	Command	Description	feature dhcp	Enables the DHCP snooping feature on the device.	ip dhcp relay	Enables or disables the DHCP relay agent.	ip dhcp snooping information option	Enables the insertion and removal of option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.	ip dhcp snooping trust	Configures an interface as a trusted source of DHCP messages.	ip dhcp snooping vlan	Enables DHCP snooping on the specified VLANs.	<div>Command Syntax</div> <div>ip dhcp snooping no ip dhcp snooping default ip dhcp snooping</div> <div>Related Commands</div> <div><ul style="list-style-type: none">ip dhcp snooping information option enables insertion of option-82 snooping data.ip dhcp snooping vlan enables DHCP snooping on specified VLANs.ip helper-address enables the DHCP relay agent on a configuration mode interface.</div>
	Command	Description												
feature dhcp	Enables the DHCP snooping feature on the device.													
ip dhcp relay	Enables or disables the DHCP relay agent.													
ip dhcp snooping information option	Enables the insertion and removal of option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.													
ip dhcp snooping trust	Configures an interface as a trusted source of DHCP messages.													
ip dhcp snooping vlan	Enables DHCP snooping on the specified VLANs.													
	Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-323.	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1269.												

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>ip dhcp snooping information option</div> <div>To enable the insertion and removal of option-82 information for DHCP packets, use the ip dhcp snooping information option command. To disable the insertion and removal of option-82 information, use the no form of this command.</div> <div>ip dhcp snooping information option</div> <div>no ip dhcp snooping information option</div> <div>Syntax Description<div>This command has no arguments or keywords.</div></div> <div>Defaults<div>By default, the device does not insert and remove option-82 information.</div></div> <div>Command Modes<div>Global configuration</div></div> <div>SupportedUserRoles<div>network-admin</div><div>vdc-admin</div></div> <div>Command History<table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></div> <div>Usage Guidelines<div>To use this command, you must enable the DHCP snooping feature (see the feature dhcp command).</div><div>This command does not require a license.</div></div> <div>Examples<div>This example shows how to globally enable DHCP snooping:</div><div>switch# configure terminal</div><div>switch(config)# ip dhcp snooping information option</div><div>switch(config)#</div></div> <div>Related Commands<table><tr><th>Command</th><th>Description</th></tr><tr><td>ip dhcp relay information option</td><td>Enables the insertion and removal of option-82 information from DHCP packets forwarded by the DHCP relay agent.</td></tr><tr><td>ip dhcp snooping</td><td>Globally enables DHCP snooping on the device.</td></tr><tr><td>ip dhcp snooping trust</td><td>Configures an interface as a trusted source of DHCP messages.</td></tr><tr><td>ip dhcp snooping vlan</td><td>Enables DHCP snooping on the specified VLANs.</td></tr></table></div>	Release	Modification	4.0(1)	This command was introduced.	Command	Description	ip dhcp relay information option	Enables the insertion and removal of option-82 information from DHCP packets forwarded by the DHCP relay agent.	ip dhcp snooping	Globally enables DHCP snooping on the device.	ip dhcp snooping trust	Configures an interface as a trusted source of DHCP messages.	ip dhcp snooping vlan	Enables DHCP snooping on the specified VLANs.	<div>ip dhcp snooping information option</div> <div>The ip dhcp snooping information option command enables the insertion of option-82 DHCP snooping information in DHCP packets on VLANs where DHCP snooping is enabled. DHCP snooping is a layer 2 switch process that allows relay agents to provide remote-ID and circuit-ID information to DHCP reply and request packets. DHCP servers use this information to determine the originating port of DHCP requests and associate a corresponding IP address to that port.</div> <div>DHCP snooping uses information option (Option-82) to include the switch MAC address (router-ID) along with the physical interface name and VLAN number (circuit-ID) in DHCP packets. After adding the information to the packet, the DHCP relay agent forwards the packet to the DHCP server through DHCP protocol processes.</div> <div>VLAN snooping on a specified VLAN requires each of these conditions:</div> <div><ul style="list-style-type: none">DHCP snooping is globally enabled.Insertion of option-82 information in DHCP packets is enabled.DHCP snooping is enabled on the specified VLAN.DHCP relay is enabled on the corresponding VLAN interface.</div> <div>When global DHCP snooping is not enabled, the ip dhcp snooping information option command persists in running-config without any operational effect.</div> <div>The no ip dhcp snooping information option and default ip dhcp snooping information option commands disable the insertion of option-82 DHCP snooping information in DHCP packets by removing the ip dhcp snooping information option statement from running-config.</div> <div>PlatformTrident</div> <div>Command ModeGlobal Configuration</div> <div>Command Syntax<div>ip dhcp snooping information option</div><div>no ip dhcp snooping information option</div><div>default ip dhcp snooping information option</div></div> <div>Related Commands<ul style="list-style-type: none">ip dhcp snooping globally enables DHCP snooping.ip dhcp snooping vlan enables DHCP snooping on specified VLANs.ip helper-address enables the DHCP relay agent on a configuration mode interface.</div> <div>Example<ul style="list-style-type: none">These commands enable DHCP snooping on DHCP packets from ports on snooping-enabled VLANs. DHCP snooping was previously enabled on the switch.<div>switch(config)#ip dhcp snooping information option</div><div>switch(config)#show ip dhcp snooping</div><div>DHCP Snooping is enabled</div><div>DHCP Snooping is operational</div><div>DHCP Snooping is configured on following VLANs:</div><div>100</div><div>DHCP Snooping is operational on following VLANs:</div><div>100</div><div>Insertion of Option-82 is enabled</div><div>Circuit-id format: Interface name:Vlan ID</div><div>Remote-id: 00:1c:73:1f:b4:38 (Switch MAC)</div><div>switch(config)#</div></div>	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1270.
	Release	Modification															
4.0(1)	This command was introduced.																
Command	Description																
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Related Commands</th><th>Command</th><th>Description</th></tr><tr><td></td><td>ip dhcp snooping</td><td>Globally enables DHCP snooping on the device.</td></tr><tr><td></td><td>ip dhcp snooping information option</td><td>Enables the insertion and removal of Option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.</td></tr><tr><td></td><td>ip dhcp snooping verify mac-address</td><td>Enables MAC address verification as part of DHCP snooping.</td></tr><tr><td></td><td>ip dhcp snooping vlan</td><td>Enables DHCP snooping on the specified VLANs.</td></tr><tr><td></td><td>show ip dhcp snooping</td><td>Displays general information about DHCP snooping.</td></tr><tr><td></td><td>show running-config dhcp</td><td>Displays DHCP snooping configuration, including IP Source Guard configuration.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-328.</p>	Related Commands	Command	Description		ip dhcp snooping	Globally enables DHCP snooping on the device.		ip dhcp snooping information option	Enables the insertion and removal of Option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.		ip dhcp snooping verify mac-address	Enables MAC address verification as part of DHCP snooping.		ip dhcp snooping vlan	Enables DHCP snooping on the specified VLANs.		show ip dhcp snooping	Displays general information about DHCP snooping.		show running-config dhcp	Displays DHCP snooping configuration, including IP Source Guard configuration.	<p>ip dhcp snooping vlan</p> <p>The ip dhcp snooping vlan command enables DHCP snooping on specified VLANs. DHCP snooping is a layer 2 process that allows relay agents to provide remote-ID and circuit-ID information in DHCP packets. DHCP servers use this data to determine the originating port of DHCP requests and associate a corresponding IP address to that port. DHCP snooping is configured on a global and VLAN basis.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1271.</p>
Related Commands	Command	Description																					
	ip dhcp snooping	Globally enables DHCP snooping on the device.																					
	ip dhcp snooping information option	Enables the insertion and removal of Option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.																					
	ip dhcp snooping verify mac-address	Enables MAC address verification as part of DHCP snooping.																					
	ip dhcp snooping vlan	Enables DHCP snooping on the specified VLANs.																					
	show ip dhcp snooping	Displays general information about DHCP snooping.																					
	show running-config dhcp	Displays DHCP snooping configuration, including IP Source Guard configuration.																					
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>ip dhcp snooping trust</td><td>Configures an interface as a trusted source of DHCP messages.</td></tr><tr><td>ip dhcp snooping vlan</td><td>Enables DHCP snooping on the specified VLANs.</td></tr><tr><td>show ip dhcp snooping</td><td>Displays general information about DHCP snooping.</td></tr><tr><td>show running-config dhcp</td><td>Displays DHCP snooping configuration, including IP Source Guard configuration.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-330.</p>	Command	Description	ip dhcp snooping trust	Configures an interface as a trusted source of DHCP messages.	ip dhcp snooping vlan	Enables DHCP snooping on the specified VLANs.	show ip dhcp snooping	Displays general information about DHCP snooping.	show running-config dhcp	Displays DHCP snooping configuration, including IP Source Guard configuration.	<p>Related Commands</p> <ul style="list-style-type: none">ip dhcp snooping globally enables DHCP snooping.ip dhcp snooping vlan enables DHCP snooping on specified VLANs.ip dhcp snooping information option enables insertion of option-82 snooping data.ip helper-address enables the DHCP relay agent on a configuration mode interface. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1302.</p>											
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ip dhcp snooping trust	Configures an interface as a trusted source of DHCP messages.																						
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>ip dhcp snooping vlan</div> <p>To enable DHCP snooping on one or more VLANs, use the ip dhcp snooping vlan command. To disable DHCP snooping on one or more VLANs, use the no form of this command.</p> <div>ip dhcp snooping vlan vlan-list</div> <div>no ip dhcp snooping vlan vlan-list</div> <table><tr><td>Syntax Description</td><td>vlan-list</td><td>Range of VLANs on which to enable DHCP snooping. The vlan-list argument allows you to specify a single VLAN ID, a range of VLAN IDs, or comma-separated IDs and ranges (see the "Examples" section). Valid VLAN IDs are from 1 to 4096.</td></tr><tr><td>Defaults</td><td colspan="2">By default, DHCP snooping is not enabled on any VLAN.</td></tr><tr><td>Command Modes</td><td colspan="2">Global configuration</td></tr><tr><td>Supported User Roles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>4.0(1)</td><td>This command was introduced.</td></tr><tr><td>Usage Guidelines</td><td colspan="2">To use this command, you must enable the DHCP snooping feature (see the feature dhcp command). This command does not require a license.</td></tr><tr><td>Examples</td><td colspan="2">This example shows how to enable DHCP snooping on VLANs 100, 200, and 250 through 252: switch# configure terminal switch(config)# ip dhcp snooping vlan 100,200,250-252 switch(config)#</td></tr><tr><td>Related Commands</td><td>Command</td><td>Description</td></tr><tr><td></td><td>ip dhcp snooping</td><td>Globally enables DHCP snooping on the device.</td></tr><tr><td></td><td>ip dhcp snooping information option</td><td>Enables the insertion and removal of option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.</td></tr><tr><td></td><td>ip dhcp snooping trust</td><td>Configures an interface as a trusted source of DHCP messages.</td></tr></table>	Syntax Description	vlan-list	Range of VLANs on which to enable DHCP snooping. The vlan-list argument allows you to specify a single VLAN ID, a range of VLAN IDs, or comma-separated IDs and ranges (see the "Examples" section). 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Examples	This example shows how to enable DHCP snooping on VLANs 100, 200, and 250 through 252: switch# configure terminal switch(config)# ip dhcp snooping vlan 100,200,250-252 switch(config)#		Related Commands	Command	Description		ip dhcp snooping	Globally enables DHCP snooping on the device.		ip dhcp snooping information option	Enables the insertion and removal of option-82 information for DHCP packets forwarded without the use of the DHCP relay agent.		ip dhcp snooping trust	Configures an interface as a trusted source of DHCP messages.	<div>ip dhcp snooping vlan</div> <p>The ip dhcp snooping vlan command enables DHCP snooping on specified VLANs. DHCP snooping is a layer 2 process that allows relay agents to provide remote-ID and circuit-ID information in DHCP packets. DHCP servers use this data to determine the originating port of DHCP requests and associate a corresponding IP address to that port. DHCP snooping is configured on a global and VLAN basis.</p> <p>VLAN snooping on a specified VLAN requires each of these conditions:</p> <ul style="list-style-type: none">DHCP snooping is globally enabled.Insertion of option-82 information in DHCP packets is enabled.DHCP snooping is enabled on the specified VLAN.DHCP relay is enabled on the corresponding VLAN interface. <p>When global DHCP snooping is not enabled, the ip dhcp snooping vlan command persists in running-config without any operational affect.</p> <p>The no ip dhcp snooping information option and default ip dhcp snooping information option commands disable DHCP snooping operability by removing the ip dhcp snooping information option statement from running-config.</p> <table><tr><td>Platform</td><td>Trident</td></tr><tr><td>Command Mode</td><td>Global Configuration</td></tr></table> <p>Command Syntax</p> <div>ip dhcp snooping vlan v_range</div> <div>no ip dhcp snooping vlan v_range</div> <div>default ip dhcp snooping vlan v_range</div> <p>Parameters</p> <ul style="list-style-type: none">v_range VLANs upon which snooping is enabled. Formats include a number, a number range, or a comma-delimited list of numbers and ranges. Numbers range from 1 to 4094. <p>Related Commands</p> <ul style="list-style-type: none">ip dhcp snooping globally enables DHCP snooping.ip dhcp snooping information option enables insertion of option-82 snooping data.ip helper-address enables the DHCP relay agent on a configuration mode interface. <p>Example</p> <ul style="list-style-type: none">These commands enable DHCP snooping globally, DHCP on VLAN interface 100, and DHCP snooping on VLAN 100. <pre>switch(config)#ip dhcp snooping switch(config)#ip dhcp snooping information option switch(config)#ip dhcp snooping vlan 100 switch(config)#interface vlan 100 switch(config-if-Vl100)#ip helper-address 10.4.4.4 switch(config-if-Vl100)#show ip dhcp snooping DHCP Snooping is enabled DHCP Snooping is operational DHCP Snooping is configured on following VLANs: 100 DHCP Snooping is operational on following VLANs: 100 Insertion of Option-82 is enabled Circuit-id format: Interface name:Vlan ID Remote-id: 00:1c:73:1f:b4:38 (Switch MAC) switch(config)#</pre>	Platform	Trident	Command Mode	Global Configuration
	Syntax Description	vlan-list	Range of VLANs on which to enable DHCP snooping. The vlan-list argument allows you to specify a single VLAN ID, a range of VLAN IDs, or comma-separated IDs and ranges (see the "Examples" section). Valid VLAN IDs are from 1 to 4096.																																							
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	Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-331.	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1302.																																								

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p><u>set-dscp-transmit</u> <u>dscp-value</u> Specifies the differentiated services code point (DSCP) value for IPv4 and IPv6 packets. The range is from 0 to 63.</p> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-444.</p>	<p>qos dscp</p> <p>The qos dscp command specifies the default differentiated services code point (DSCP) value of the configuration mode interface. The default DSCP determines the traffic class for non-IP packets that are inbound on DSCP trusted ports. DSCP trusted ports determine the traffic class for inbound packets as follows:</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1093.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 991; Arista User Manual, v. 4.11.1 (1/11/13), at 795; Arista User Manual v. 4.10.3 (10/22/12), at 646; Arista User Manual v. 4.9.3.2 (5/3/12), at 576; Arista User Manual v. 4.8.2 (11/18/11), at 666.</p>

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>policy-map type control-plane</div><div>To create or specify a control plane policy map and enter policy map configuration mode, use the policy-map type control-plane command. To delete a control plane policy map, use the no form of this command.</div><div><div>policy-map type control-plane</div>policy-map-name</div><div><div>no policy-map type control-plane</div>policy-map-name</div><table><tr><td>Syntax Description</td><td>policy-map-name</td><td>Name of the class map. The name is alphanumeric, case sensitive, and has a maximum of 64 characters.</td></tr><tr><td>Defaults</td><td colspan="2">None</td></tr><tr><td>Command Modes</td><td colspan="2">Global configuration</td></tr><tr><td>Supported User Roles</td><td colspan="2">network-admin vdc-admin</td></tr><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>4.0(1)</td><td>This command was introduced.</td></tr><tr><td>Usage Guidelines</td><td colspan="2">You can use this command only in the default VDC. This command does not require a license.</td></tr><tr><td>Examples</td><td colspan="2">This example shows how to specify a control plane policy map and enter policy map configuration mode: <pre>switch# config t switch(config)# policy-map type control-plane PolicyMapA switch(config-pmap)#</pre> This example shows how to delete a control plane policy map: <pre>switch# config t switch(config)# no policy-map type control-plane PolicyMapA</pre></td></tr></table></div>	Syntax Description	policy-map-name	Name of the class map. The name is alphanumeric, case sensitive, and has a maximum of 64 characters.	Defaults	None		Command Modes	Global configuration		Supported User Roles	network-admin vdc-admin		Command History	Release	Modification		4.0(1)	This command was introduced.	Usage Guidelines	You can use this command only in the default VDC. This command does not require a license.		Examples	This example shows how to specify a control plane policy map and enter policy map configuration mode: <pre>switch# config t switch(config)# policy-map type control-plane PolicyMapA switch(config-pmap)#</pre> This example shows how to delete a control plane policy map: <pre>switch# config t switch(config)# no policy-map type control-plane PolicyMapA</pre>		<div><div>policy-map type control-plane</div><div>The policy-map type control-plane command places the switch in Policy-Map (control plane) configuration mode, which is a group change mode that modifies a control-plane policy map. A policy map is a data structure that consists of class maps that identify a specific data stream and specify bandwidth and shaping parameters that controls its transmission. Control plane policy maps are applied to the control plane to manage traffic.</div><div>The copp-system-policy policy map is supplied with the switch and is always applied to the control plane. Copp-system-policy is the only valid control plane policy map.</div><div>The exit command saves pending policy map changes to <i>running-config</i> and returns the switch to global configuration mode. Policy map changes are also saved by entering a different configuration mode. The abort command discards pending changes, returning the switch to global configuration mode.</div><div>The no policy-map type control-plane and default policy-map type control-plane commands delete the specified policy map by removing the corresponding policy-map type control-plane command and its associated configuration.</div><div><div>Platform</div>FM6000, Petra, Trident</div><div><div>Command Mode</div>Global Configuration</div><div>Command Syntax</div><div><div>policy-map type control-plane</div> copp-system-policy</div><div><div>no policy-map type control-plane</div> copp-system-policy</div><div><div>default policy-map type control-plane</div> copp-system-policy</div><div>copp-system-policy is supplied with the switch and is the only valid control plane policy map.</div><div>Commands Available in Policy-Map Configuration Mode</div><div><div>class (policy-map (control-plane) – FM6000)</div><div>class (policy-map (control-plane) – Trident)</div></div><div>Related Commands</div><div><div>class-map type control-plane</div> enters control-plane class-map configuration mode.</div><div>Example</div><div><div>This command places the switch in policy-map configuration mode to edit the copp-system-policy policy map.</div><div><div>switch(config)#policy-map type control-plane</div> copp-system-policy</div><div>switch(config-pmap-copp-system-policy)#</div></div></div>	<div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1194.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 980; Arista User Manual, v. 4.11.1 (1/11/13), at 784.</div>
	Syntax Description	policy-map-name	Name of the class map. The name is alphanumeric, case sensitive, and has a maximum of 64 characters.																								
Defaults	None																										
Command Modes	Global configuration																										
Supported User Roles	network-admin vdc-admin																										
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Examples	This example shows how to specify a control plane policy map and enter policy map configuration mode: <pre>switch# config t switch(config)# policy-map type control-plane PolicyMapA switch(config-pmap)#</pre> This example shows how to delete a control plane policy map: <pre>switch# config t switch(config)# no policy-map type control-plane PolicyMapA</pre>																										


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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>To view per-entry statistics, use the <code>show access-lists</code> command or the applicable following command:</p> <ul style="list-style-type: none"> • <code>show ip access-lists</code> • <code>show ipv6 access-lists</code> • <code>show mac access-lists</code> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-517.</p>	<p>Displaying Contents of an ACL</p> <p>These commands display ACL contents.</p> <ul style="list-style-type: none"> • <code>show ip access-lists</code> • <code>show ipv6 access-lists</code> • <code>show mac access-lists</code> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 845.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 724; Arista User Manual, v. 4.11.1 (1/11/13), at 552; Arista User Manual v. 4.10.3 (10/22/12), at 466.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display control plane class map information:</p> <pre>switch# show class-map type control-plane</pre> <pre>class-map type control-plane match-any copp-system-class-critical match access-grp name copp-system-acl-arp match access-grp name copp-system-acl-msdp</pre> <pre>class-map type control-plane match-any copp-system-class-important match access-grp name copp-system-acl-gre match access-grp name copp-system-acl-tacas</pre> <pre>class-map type control-plane match-any copp-system-class-normal match access-grp name copp-system-acl-icmp match redirect dhcp-snoop match redirect arp-inspect match exception ip option match exception ip icmp redirect match exception ip icmp unreachable</pre> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-552.</p>	<p>Example</p> <ul style="list-style-type: none"> • This command displays all control plane class maps. • This command displays the available control plane class maps. <pre>switch>show class-map type control-plane</pre> <pre>Class-map: CM-CP1 (match-any) Match: ip access-group name LIST-CP1 Class-map: copp-system-aclog (match-any) Class-map: copp-system-arp (match-any) Class-map: copp-system-arpresolver (match-any) Class-map: copp-system-bpdu (match-any) Class-map: copp-system-glean (match-any) Class-map: copp-system-igmp (match-any) Class-map: copp-system-ipmcmiss (match-any) Class-map: copp-system-ipmcsvd (match-any) Class-map: copp-system-l3destmiss (match-any) Class-map: copp-system-l3slowpath (match-any) Class-map: copp-system-l3ttl1 (match-any) Class-map: copp-system-lacp (match-any) Class-map: copp-system-lldp (match-any) Class-map: copp-system-selfip (match-any) Class-map: copp-system-selfip-tc6to7 (match-any) Class-map: copp-system-sflow (match-any) Class-map: copp-system-tc3to5 (match-any) Class-map: copp-system-tc6to7 (match-any)</pre> <pre>switch></pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/20140), at 1212.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display the DHCP relay status and configured DHCP server addresses:</p> <pre>switch# show ip dhcp relay DHCP relay service is enabled Insertion of option 82 is enabled Insertion of VPN suboptions is enabled Helper addresses are configured on the following interfaces: Interface Relay Address VRF Name ----- Ethernet1/4 10.10.10.1 red switch#</pre> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-630.</p>	<p>Example</p> <ul style="list-style-type: none"> This command displays the DHCP relay agent configuration status. <pre>switch>show ip dhcp relay DHCP servers: 172.22.22.11 Vlan1000: DHCP clients are permitted on this interface</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1237.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1047; Arista User Manual, v. 4.11.1 (1/11/13), at 868; Arista User Manual v. 4.10.3 (10/22/12), at 716.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display general status information about DHCP snooping:</p> <pre>switch# show ip dhcp snooping DHCP snooping service is enabled Switch DHCP snooping is enabled DHCP snooping is configured on the following VLANs: 1,13 DHCP snooping is operational on the following VLANs: 1 Insertion of Option 82 is disabled Verification of MAC address is enabled DHCP snooping trust is configured on the following interfaces: Interface Trusted ----- Ethernet2/3 Yes switch#</pre> <p>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-634.</p>	<p>Example</p> <ul style="list-style-type: none"> This command DHCP snooping hardware status. <pre>switch>show ip dhcp snooping hardware DHCP Snooping is enabled DHCP Snooping is enabled on following VLANs: None Vlans enabled per Slice Slice: FixedSystem None switch></pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1304.</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to use the show port-security command to view the status of the port security feature on a device:</div> <div>switch# show port-security</div> <div>Total Secured Mac Addresses in System (excluding one mac per port) : 0 Max Addresses limit in System (excluding one mac per port) : 8192</div> <table><thead><tr><th>Secure Port</th><th>MaxSecureAddr (Count)</th><th>CurrentAddr (Count)</th><th>SecurityViolation (Count)</th><th>Security Action</th></tr></thead><tbody><tr><td>Ethernet1/4</td><td>5</td><td>1</td><td>0</td><td>Shutdown</td></tr></tbody></table> <div>switch#</div> <div>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-661.</div>	Secure Port	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action	Ethernet1/4	5	1	0	Shutdown	<div>Example</div> <div><ul style="list-style-type: none">These commands enable MAC security on Ethernet interface 7, set the maximum number of assigned MAC addresses to 2, assigns two static MAC addresses to the interface, and clears the dynamic MAC addresses for the interface.</div> <div>switch(config)#interface ethernet 7 switch(config-if-Et7)#switchport port-security switch(config-if-Et7)#switchport port-security maximum 2 switch(config-if-Et7)#exit switch(config)#mac address-table static 0034.24c2.8f11 vlan 10 interface ethernet 7 switch(config)#mac address-table static 4464.842d.17ce vlan 10 interface ethernet 7 switch(config)#clear mac address-table dynamic interface ethernet 7 switch(config)#show port-security</div> <table><thead><tr><th>Secure Port</th><th>MaxSecureAddr (Count)</th><th>CurrentAddr (Count)</th><th>SecurityViolation (Count)</th><th>Security Action</th></tr></thead><tbody><tr><td>Et7</td><td>2</td><td>2</td><td>0</td><td>Shutdown</td></tr></tbody></table> <div>Total Addresses in System: 1 switch(config)#show port-security address Secure Mac Address Table</div> <table><thead><tr><th>Vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr></thead><tbody><tr><td>10</td><td>0034.24c2.8f11</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr><tr><td>10</td><td>4464.842d.17ce</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr></tbody></table> <div>Total Mac Addresses for this criterion: 2 switch(config)#</div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 632.</div> <div>See also Arista User Manual v. 4.13.6F (4/14/2014), at 624; Arista User Manual v. 4.12.3 (7/17/13), at 501; Arista User Manual, v. 4.11.1 (1/11/13), at 405-06; Arista User Manual v. 4.10.3 (10/22/12), at 336; Arista User Manual v. 4.9.3.2 (5/3/12), at 405-06.</div>	Secure Port	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action	Et7	2	2	0	Shutdown	Vlan	Mac Address	Type	Ports	Remaining Age (mins)	10	0034.24c2.8f11	SecureConfigured	Et7	N/A	10	4464.842d.17ce	SecureConfigured	Et7	N/A
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to use the <code>show port-security address</code> command to view information about all MAC addresses secured by port security:</div> <div>switch# show port-security address</div> <div>Total Secured Mac Addresses in System (excluding one mac per port) : 0 Max Addresses limit in System (excluding one mac per port) : 8192</div> <div>-----</div> <div>Secure Mac Address Table</div> <div><table><tr><th>vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr><tr><td>1</td><td>0054.AAB3.770F</td><td>STATIC</td><td>port-channel1</td><td>0</td></tr><tr><td>1</td><td>00EE.378A.ABCE</td><td>STATIC</td><td>Ethernet1/4</td><td>0</td></tr></table></div> <div>-----</div> <div>switch#</div> <div>This example shows how to use the <code>show port-security address</code> command to view the MAC addresses secured by the port security feature on the Ethernet 1/4 interface:</div> <div>switch# show port-security address interface ethernet 1/4</div> <div>Secure Mac Address Table</div> <div><table><tr><th>Vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr><tr><td>1</td><td>00EE.378A.ABCE</td><td>STATIC</td><td>Ethernet1/4</td><td>0</td></tr></table></div> <div>-----</div> <div>switch#</div> <div>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-664.</div>	vlan	Mac Address	Type	Ports	Remaining Age (mins)	1	0054.AAB3.770F	STATIC	port-channel1	0	1	00EE.378A.ABCE	STATIC	Ethernet1/4	0	Vlan	Mac Address	Type	Ports	Remaining Age (mins)	1	00EE.378A.ABCE	STATIC	Ethernet1/4	0	<div>Example</div> <div><ul style="list-style-type: none">This command displays MAC addresses assigned to port-security protected interfaces.</div> <div>switch>show port-security address</div> <div>Secure Mac Address Table</div> <div>-----</div> <div><table><tr><th>Vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr><tr><td>10</td><td>164f.29ae.4e14</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr><tr><td>10</td><td>164f.29ae.4f11</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr><tr><td>10</td><td>164f.320a.3a11</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr></table></div> <div>-----</div> <div>Total Mac Addresses for this criterion: 3</div> <div>switch></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 698.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 562; Arista User Manual, v. 4.11.1 (1/11/13), at 446; Arista User Manual v. 4.10.3 (10/22/12), at 366; Arista User Manual v. 4.9.3.2 (5/3/12), at 338.</div>	Vlan	Mac Address	Type	Ports	Remaining Age (mins)	10	164f.29ae.4e14	SecureConfigured	Et7	N/A	10	164f.29ae.4f11	SecureConfigured	Et7	N/A	10	164f.320a.3a11	SecureConfigured	Et7	N/A
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Related Commands</div> <div><table><tr><th>Command</th><th>Description</th></tr><tr><td>feature dhcp</td><td>Enables the DHCP snooping feature on the device.</td></tr><tr><td>ip dhcp snooping</td><td>Globally enables DHCP snooping on the device.</td></tr><tr><td>service dhcp</td><td>Enables or disables the DHCP relay agent.</td></tr><tr><td>show ip dhcp snooping</td><td>Displays general information about DHCP snooping.</td></tr><tr><td>show ip dhcp snooping binding</td><td>Displays IP-MAC address bindings, including the static IP source entries.</td></tr></table></div> <div>Cisco Nexus 7000 Series NX-OS Security Command Reference (2013), at SEC-695.</div>	Command	Description	feature dhcp	Enables the DHCP snooping feature on the device.	ip dhcp snooping	Globally enables DHCP snooping on the device.	service dhcp	Enables or disables the DHCP relay agent.	show ip dhcp snooping	Displays general information about DHCP snooping.	show ip dhcp snooping binding	Displays IP-MAC address bindings, including the static IP source entries.	<div>ip dhcp snooping</div> <div>The <code>ip dhcp snooping</code> command enables DHCP snooping globally on the switch. DHCP snooping is a set of layer 2 processes that can be configured on LAN switches and used with DHCP servers to control network access to clients with specific IP/MAC addresses. The switch supports Option-82 insertion, which is a DHCP snooping process that allows relay agents to provide remote-ID and circuit-ID information to DHCP reply and request packets. DHCP servers use this information to determine the originating port of DHCP requests and associate a corresponding IP address to that port. DHCP servers use port information to track host location and IP address usage by authorized physical ports.</div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1269.</div>																																	
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Usage Guidelines In order for LLDP to discover servers connected to your device, the servers must be running openLLDP software.</p> <p>LLDP must be enabled on the device before you can enable or disable it on any interfaces.</p> <p> Note LLDP is supported only on physical interfaces. LLDP timers and type, length, and value (TLV) descriptions cannot be configured using Cisco DCNM.</p> <p>LLDP can discover up to one device per port. LLDP can discover up to one server per port. LLDP can discover only Linux servers that are connected to your device. LLDP can discover Linux servers, if they are not using a converged network adapter (CNA); however, LLDP cannot discover other types of servers.</p> <p>Make sure that you are in the correct virtual device context (VDC). To switch VDCs, use the switchto vdc command.</p> <p>This command does not require a license.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 174.</p>	<p>12.2.4 Guidelines and Limitations</p> <p>LLDP has the following configuration guidelines and limitations:</p> <ul style="list-style-type: none"> • LLDP must be enabled on the device before you can enable or disable it on any interface. • LLDP is supported only on physical interfaces. • LLDP can discover up to one device per port. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 576.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 448; Arista User Manual, v. 4.11.1 (1/11/13), at 366.</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>lldp holdtime</div> <p>To configure the amount of time that a receiving device should hold the information sent by your device before discarding it, use the <code>lldp holdtime</code> command. To remove the hold time configuration, use the <code>no</code> form of this command.</p> <div>lldp holdtime seconds</div> <table><tr><td>Syntax Description</td><td>seconds</td><td>Hold time in seconds. The range is from 10 to 255 seconds.</td></tr></table> <div>Defaults120 seconds</div> <div>Command ModesGlobal configuration mode (config)</div> <div>SupportedUserRolesnetwork-admin network-operator vdc-admin vdc-operator</div> <table><tr><td>Command History</td><td>Release</td><td>Modification</td></tr><tr><td></td><td>5.0(1)</td><td>This command was introduced.</td></tr></table> <div>Usage GuidelinesMake sure that you are in the correct virtual device context (VDC). To switch VDCs, use the <code>switchto vdc</code> command. This command does not require a license.</div> <div>ExamplesThis example shows how to configure the Link Layer Discovery Protocol (LLDP) hold time:<div>switch(config)# lldp holdtime 180 switch(config)#</div> This example shows how to remove the LLDP hold time configuration:<div>switch(config)# no lldp holdtime 180 switch(config)#</div></div>	Syntax Description	seconds	Hold time in seconds. The range is from 10 to 255 seconds.	Command History	Release	Modification		5.0(1)	This command was introduced.	<div>lldp holdtime</div> <p>The <code>lldp holdtime</code> command specifies the amount of time a receiving device should hold the information sent by the device before discarding it.</p> <div>Platformall Command ModeGlobal Configuration</div> <div>Command Syntaxlldp holdtime period no lldp holdtime default lldp holdtime</div> <div>Parameters<ul style="list-style-type: none"><code>period</code> The amount of time a receiving device should hold the LLDPDU information sent before discarding it. Value ranges from 10 to 65535 second; default value is 120 seconds.</div> <div>Examples<ul style="list-style-type: none">This command sets the amount of time to 180 seconds before the receiving device discards the LLDPDU information.<div>switch(config)# lldp holdtime 180 switch(config)#</div>This command removes the configured time before the receiving device discards the LLDPDU information.<div>switch(config)# no lldp holdtime 180 switch(config)#</div></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 585.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 458; Arista User Manual, v. 4.11.1 (1/11/13), at 376.</div>
	Syntax Description	seconds	Hold time in seconds. The range is from 10 to 255 seconds.								
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Related Commands	Command	Description									
	lldp reinit	Specifies the delay time in seconds for LLDP to initialize on any interface.									
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td>lldp transmit</td><td>Enables the transmission of LLDP packets on an interface.</td></tr> <tr> <td></td><td>show lldp interface ethernet</td><td>Displays the LLDP configuration on an interface.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 231.</p>	Related Commands	Command	Description		lldp transmit	Enables the transmission of LLDP packets on an interface.		show lldp interface ethernet	Displays the LLDP configuration on an interface.	<p>lldp transmit</p> <p>The lldp transmit command enables the transmission of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 593.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 446; Arista User Manual, v. 4.11.1 (1/11/13), at 384.</p>
Related Commands	Command	Description									
	lldp transmit	Enables the transmission of LLDP packets on an interface.									
	show lldp interface ethernet	Displays the LLDP configuration on an interface.									
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td>lldp holdtime</td><td>Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 232.</p>	Related Commands	Command	Description		lldp holdtime	Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.	<p>12.3.3.2 Setting the LLDP Hold Time</p> <p>The lldp holdtime command specifies the amount of time in seconds that a receiving device should hold the information sent by the device before discarding it.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 578.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 450; Arista User Manual, v. 4.11.1 (1/11/13), at 368.</p>			
Related Commands	Command	Description									
	lldp holdtime	Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.									

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Related Commands	Command	Description												
	<code>lldp reint</code>	Specifies the delay time in seconds for LLDP to initialize on any interface.												
	<code>lldp holdtime</code>	Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.												
	<code>show lldp timers</code>	Displays the LLDP holdtime, delay time, and update frequency configuration.												
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>lldp tlv-select</p> <p>To configure the type, length, and value (TLV) descriptions to send and receive in Link Layer Discovery Protocol (LLDP) packets, use the <code>lldp tlv-select</code> command. To remove the TLV configuration, use the no form of this command.</p> <p><code>lldp tlv-select [debxp management-address port-description port-vlan system-capabilities system-description system-name]</code></p> <p><code>no lldp tlv-select [debxp management-address port-description port-vlan system-capabilities system-description system-name]</code></p> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 236.</p>	<p>12.3.3.5 Selecting the LLDP TLV</p> <p>The <code>lldp tlv-select</code> command configures the type, length, and value (TLV) descriptions to send and receive in Link Layer Discovery Protocol (LLDP) packets. Use the no form of this command to remove the TLV configuration.</p> <p>Example</p> <ul style="list-style-type: none"> This command enables the system descriptions to be included in the TLVs. <pre>switch(config)# lldp tlv-select system-description switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 578.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 465; Arista User Manual, v. 4.11.1 (1/11/13), at 368-69.</p>												

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div>logging console</div> <div>To enable logging messages to the console session, use the <code>logging console</code> command. To disable logging messages to the console session, use the <code>no</code> form of this command.</div> <div><code>logging console [severity-level]</code></div> <div><code>no logging console</code></div> <div><table><tr><td>Syntax Description</td><td><div><div><i>severity-level</i></div><div>(Optional) Number of the desired severity level at which messages should be logged. Messages at or numerically lower than the specified level are logged. Severity levels are as follows:</div><div><ul style="list-style-type: none">0—emergency: System unusable1—alert: Immediate action needed2—critical: Critical condition—default level3—error: Error condition4—warning: Warning condition5—notification: Normal but significant condition6—informational: Informational message only7—debugging: Appears during debugging only</div></div></td></tr></table><div><table><tr><td>Defaults</td><td>None</td></tr></table></div><div><table><tr><td>Command Modes</td><td>Global configuration mode</td></tr></table></div><div><table><tr><td>Supported User Roles</td><td>network-admin vdc-admin</td></tr></table></div><div><table><tr><td>Command History</td><td><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></td></tr></table></div><div><table><tr><td>Usage Guidelines</td><td>This command does not require a license.</td></tr></table></div><div><table><tr><td>Examples</td><td><div>This example shows how to enable logging messages with a severity level of 4 (warning) or higher to the console session:</div><pre>switch# configure terminal switch(config)# logging console 4 switch(config)#</pre></td></tr></table></div><div>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 242.</div></div>	Syntax Description	<div><div><i>severity-level</i></div><div>(Optional) Number of the desired severity level at which messages should be logged. Messages at or numerically lower than the specified level are logged. Severity levels are as follows:</div><div><ul style="list-style-type: none">0—emergency: System unusable1—alert: Immediate action needed2—critical: Critical condition—default level3—error: Error condition4—warning: Warning condition5—notification: Normal but significant condition6—informational: Informational message only7—debugging: Appears during debugging only</div></div>	Defaults	None	Command Modes	Global configuration mode	Supported User Roles	network-admin vdc-admin	Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table>	Release	Modification	4.0(1)	This command was introduced.	Usage Guidelines	This command does not require a license.	Examples	<div>This example shows how to enable logging messages with a severity level of 4 (warning) or higher to the console session:</div> <pre>switch# configure terminal switch(config)# logging console 4 switch(config)#</pre>	<div>logging trap system</div> <div>The <code>logging trap system</code> command enables the logging of system messages to a remote server, or limits the syslog messages saved to a remote server based on severity. Use this command without a specified level to enable remote logging.</div> <div>The <code>no logging trap system</code> and default <code>logging trap system</code> commands clear the specified method list by removing the corresponding logging trap system command from <i>running-config</i>.</div> <div><table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Global Configuration</td></tr></table></div> <div>Command Syntax<div><code>logging trap system [FACILITY_LEVEL] [CONDITION] [PROGRAM] [TEXT]</code> <code>no logging trap system [FACILITY_LEVEL] [CONDITION] [PROGRAM] [TEXT]</code> <code>default logging trap system [FACILITY_LEVEL] [CONDITION] [PROGRAM] [TEXT]</code></div><div>The <i>TEXT</i> parameter, when present, is always last. All other parameters can be placed in any order.</div><div>Parameters<ul style="list-style-type: none"><i>FACILITY_LEVEL</i> Defines the appropriate facility.<ul style="list-style-type: none"><no parameter> Specifies default facility.<i>facility</i> <facility-name> Specifies named facility.<i>CONDITION</i> Specifies condition level. Options include:<ul style="list-style-type: none"><no parameter> Specifies default condition level.<i>severity</i> <condition-level> Name of the severity level at which messages should be logged.<div><div>Valid <i>condition-level</i> options include:</div><ul style="list-style-type: none">0 or emergencies System is unusable1 or alerts Immediate action needed2 or critical Critical conditions3 or errors Error conditions4 or warnings Warning conditions5 or notifications Normal but significant conditions6 or informational Informational messages7 or debugging Debugging messages</div><ul style="list-style-type: none"><i>PROGRAM</i> Filters packets based on program name. Options include:<ul style="list-style-type: none"><no parameter> All tags or program names.<i>tag program-name</i> Specific tag or program name.<i>TEXT</i> Specifies log message text. Options include:<ul style="list-style-type: none"><no parameter> Specify text contained in log message.<i>contain reg-expression</i> Specify text contained in log message.<div>Examples<ul style="list-style-type: none">This command enables the logging of system informational messages to a remote server.<pre>switch(config)#logging trap informational switch(config)#</pre></div></div></div>	Platform	all	Command Mode	Global Configuration
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>To configure the interval between Precision Time Protocol (PTP) announce messages on an interface or the number of PTP intervals before a timeout occurs on an interface, use the ptp announce command. To remove the interval configuration for PTP messages, use the no form of this command.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 330.</p>	<p>Set the Peer Delay Request Interval</p> <p>To configure the minimum interval allowed between Precision Time Protocol (PTP) peer delay-request messages, use the ptp pdelay-req interval command.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 273.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 216.</p>															
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to configure the interval between PTP announce messages on an interface:</p> <pre>switch# configure terminal switch(config)# interface ethernet 5/1 switch(config-if)# ptp announce interval 1 switch(config-if)#</pre> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 330.</p>	<p>Examples</p> <ul style="list-style-type: none"> This command shows how to configure the interval between PTP announce messages on an interface. <pre>switch(config)# interface ethernet 5 switch(config-if-Et5)# ptp announce interval 1 switch(config-if-Et5)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 315.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 253; Arista User Manual, v. 4.11.1 (1/11/13), at 199.</p>															
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td>ptp</td><td>Enables or disables PTP on an interface.</td></tr> <tr> <td></td><td>ptp announce</td><td>Configures the interval between PTP announce messages on an interface or the number of PTP intervals before a timeout occurs on an interface.</td></tr> <tr> <td></td><td>ptp sync interval</td><td>Configures the interval between PTP synchronization messages on an interface.</td></tr> <tr> <td></td><td>ptp vlan vlan</td><td>Configures the PTP VLAN value on an interface.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 333.</p>	Related Commands	Command	Description		ptp	Enables or disables PTP on an interface.		ptp announce	Configures the interval between PTP announce messages on an interface or the number of PTP intervals before a timeout occurs on an interface.		ptp sync interval	Configures the interval between PTP synchronization messages on an interface.		ptp vlan vlan	Configures the PTP VLAN value on an interface.	<p>ptp announce interval</p> <p>The ptp announce interval command configures the interval between PTP announcement messages on or the number of PTP intervals before a timeout occurs. To disable this feature, use the no form of this command.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 315.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 253; Arista User Manual, v. 4.11.1 (1/11/13), at 199.</p>
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	ptp sync interval	Configures the interval between PTP synchronization messages on an interface.															
	ptp vlan vlan	Configures the PTP VLAN value on an interface.															

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>ptp delay-request minimum interval</div> <div>To configure the minimum interval allowed between Precision Time Protocol (PTP) delay-request messages when the port is in the master state, use the ptp delay-request minimum interval command. To remove the minimum interval configuration for PTP delay-request messages, use the no form of this command.</div> <div>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 332.</div>	<div>ptp delay-req interval</div> <div>The ptp delay-req interval command specifies the time recommended to the slave devices to send delay request messages. You must enable PTP on the switch first and configure the source IP address for PTP communication. To remove the minimum interval configuration for PTP delay-request messages, use the no form of this command.</div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 318.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 256; Arista User Manual, v. 4.11.1 (1/11/13), at 202.</div>										
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>feature ptp</td><td>Enables or disables PTP on the device.</td></tr><tr><td>ptp source</td><td>Configures the source IP address for all PTP packets.</td></tr><tr><td>ptp priority1</td><td>Configures the priority1 value to use when advertising this clock.</td></tr><tr><td>ptp priority2</td><td>Configures the priority2 value to use when advertising this clock.</td></tr></table></div> <div>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 334.</div>	Command	Description	feature ptp	Enables or disables PTP on the device.	ptp source	Configures the source IP address for all PTP packets.	ptp priority1	Configures the priority1 value to use when advertising this clock.	ptp priority2	Configures the priority2 value to use when advertising this clock.	<div>ptp source ip</div> <div>The ptp source ip command configures the source IP address for all PTP packets. The IP address can be in IPv4 format. To remove PTP settings, use the no form of this command.</div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 328.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 264; Arista User Manual, v. 4.11.1 (1/11/13), at 210.</div>
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>ptp priority1</p> <p>To configure the priority1 value when advertising the Precision Time Protocol (PTP) clock, use the ptp priority1 command. To remove the priority1 value, use the no form of this command.</p> <pre>ptp priority1 priority-number no ptp priority1 priority-number</pre> <table border="1"> <tr> <td>Syntax Description</td><td><i>priority-number</i></td><td>Priority number. The range is from 0 to 255.</td></tr> <tr> <td>Defaults</td><td colspan="2">255</td></tr> <tr> <td>Command Modes</td><td colspan="2">Global configuration mode (config)</td></tr> <tr> <td>Supported User Roles</td><td colspan="2">network-admin vdc-admin</td></tr> <tr> <td rowspan="2">Command History</td><td>Release</td><td>Modification</td></tr> <tr> <td>5.2(1)</td><td>This command was introduced.</td></tr> <tr> <td>Usage Guidelines</td><td colspan="2">This command does not require a license.</td></tr> <tr> <td rowspan="2">Examples</td><td colspan="2">This example shows how to configure the priority1 value when advertising the PTP clock:</td></tr> <tr> <td colspan="2"> <pre>switch# configure terminal switch(config)# ptp priority1 10</pre> </td></tr> <tr> <td rowspan="2"></td><td colspan="2">This example shows how to remove the priority1 value when advertising the PTP clock:</td></tr> <tr> <td colspan="2"> <pre>switch# configure terminal switch(config)# no ptp priority1 10</pre> </td></tr> <tr> <td></td><td colspan="2">Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 336.</td></tr> </table>	Syntax Description	<i>priority-number</i>	Priority number. The range is from 0 to 255.	Defaults	255		Command Modes	Global configuration mode (config)		Supported User Roles	network-admin vdc-admin		Command History	Release	Modification	5.2(1)	This command was introduced.	Usage Guidelines	This command does not require a license.		Examples	This example shows how to configure the priority1 value when advertising the PTP clock:		<pre>switch# configure terminal switch(config)# ptp priority1 10</pre>			This example shows how to remove the priority1 value when advertising the PTP clock:		<pre>switch# configure terminal switch(config)# no ptp priority1 10</pre>			Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 336.		<p>Set the PTP Priority1</p> <p>To configure the priority1 value when advertising the clock, use the ptp priority1 command. This value overrides the default criteria for best master clock selection. Lower values take precedence.</p> <ul style="list-style-type: none"> The ptp priority1 command configures the priority1 value of 120 to use when advertising the clock. <pre>switch(config)# ptp priority1 120 switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 272.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 214-15.</p>
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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><th>Command</th><th>Description</th></tr><tr><td>ptp priority1</td><td>Configures the priority1 value to use when advertising this clock.</td></tr><tr><td>ptp priority2</td><td>Configures the priority2 value to use when advertising this clock.</td></tr><tr><td>show ptp brief</td><td>Displays the PTP status.</td></tr><tr><td>show ptp clock</td><td>Displays the properties of the local clock.</td></tr></table> Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 340.	Command	Description	ptp priority1	Configures the priority1 value to use when advertising this clock.	ptp priority2	Configures the priority2 value to use when advertising this clock.	show ptp brief	Displays the PTP status.	show ptp clock	Displays the properties of the local clock.	<p>Set the PTP Priority1</p> <p>To configure the priority1 value when advertising the clock, use the ptp priority1 command. This value overrides the default criteria for best master clock selection. Lower values take precedence.</p> <ul style="list-style-type: none">The ptp priority1 command configures the priority1 value of 120 to use when advertising the clock. <pre>switch(config)# ptp priority1 120 switch(config)#</pre> <p>Set the PTP Priority2</p> <p>To configure the priority2 value when advertising this clock, use the ptp priority2 command. This value is used to decide between two devices that are otherwise equally matched in the default criteria.</p> <ul style="list-style-type: none">The ptp priority2 command configures the priority2 value of 128 to use when advertising this clock. <pre>switch(config)# ptp priority2 128 switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 272.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 214-15.</p>					
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>ptp sync interval</p> <p>To configure the interval between Precision Time Protocol (PTP) synchronization messages on an interface, use the ptp sync interval command. To remove the interval configuration for PTP messages synchronization, use the no form of this command.</p> <pre>ptp sync interval seconds no ptp sync interval seconds</pre> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 340.</p>	<p>Set the Peer Delay Request Interval</p> <p>To configure the minimum interval allowed between Precision Time Protocol (PTP) peer delay-request messages, use the ptp pdelay-req interval command.</p> <ul style="list-style-type: none"> The ptp pdelay-req interval command configures the minimum interval allowed between Precision Time Protocol (PTP) peer delay-request messages to 3. <pre>switch(config-if-Et5)# ptp pdelay-request interval 3 switch(config-if-Et5)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 273.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 216.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>ptp sync interval</p> <p>To configure the interval between Precision Time Protocol (PTP) synchronization messages on an interface, use the ptp sync interval command. To remove the interval configuration for PTP messages synchronization, use the no form of this command.</p> <pre>ptp sync interval seconds no ptp sync interval seconds</pre> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 340.</p>	<p>ptp delay-req interval</p> <p>The ptp delay-req interval command specifies the time recommended to the slave devices to send delay request messages. You must enable PTP on the switch first and configure the source IP address for PTP communication. To remove the minimum interval configuration for PTP delay-request messages, use the no form of this command.</p> <p>Platform Arad, FM6000 Command Mode Interface-Ethernet Configuration Interface-Port Channel Configuration</p> <p>Command Syntax</p> <pre>ptp delay-req interval log_interval no ptp delay-req interval default ptp delay-req interval</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 318.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 256; Arista User Manual, v. 4.11.1 (1/11/13), at 202.</p>

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	ptp vlan vlan	Configures the PTP VLAN value on an interface.															
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Make sure that you have globally enabled PTP on the device and configured the source IP address for PTP communication.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 343.</p>	<p>The ptp delay-request interval command specifies the time recommended to the slave devices to send delay request messages. You must enable PTP on the switch first and configure the source IP address for PTP communication. To remove the minimum interval configuration for PTP delay-request messages, use the no form of this command.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 318.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 256; Arista User Manual, v. 4.11.1 (1/11/13), at 202.</p>															

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>snmp-server user</div> <p>To configure the Simple Network Management Protocol (SNMP) user information, use the <code>snmp-server user</code> command. To disable the configuration or to revert to factory defaults, use the <code>no</code> form of this command.</p> <pre>snmp-server user username [group-name] [auth {md5 sha} password [priv {aes-128} password] [localizedkey] [engineID id]] no snmp-server user username [group-name] [auth {md5 sha} password [priv {aes-128} password] [localizedkey] [engineID id]]</pre> <table><tr><td>Syntax Description</td><td><code>username</code></td><td>Name of the user. The name can be any case-sensitive, alphanumeric string up to 32 characters.</td></tr><tr><td></td><td><code>group-name</code></td><td>(Optional) Name of the group. The name can be any case-sensitive, alphanumeric string up to 32 characters.</td></tr><tr><td></td><td><code>auth</code></td><td>(Optional) Sets authentication parameters for the user.</td></tr><tr><td></td><td><code>md5</code></td><td>Uses the MD5 algorithm for authentication.</td></tr><tr><td></td><td><code>sha</code></td><td>Uses the SHA algorithm for authentication.</td></tr><tr><td></td><td><code>password</code></td><td>User password. The password can be any case-sensitive, alphanumeric string up to 64 characters. If you configure the <code>localizedkey</code> keyword, the password can be any case-sensitive, alphanumeric string up to 130 characters</td></tr><tr><td></td><td><code>priv</code></td><td>(Optional) Sets encryption parameters for the user.</td></tr><tr><td></td><td><code>aes-128</code></td><td>(Optional) Sets the 128-byte AES algorithm for privacy.</td></tr><tr><td></td><td><code>localizedkey</code></td><td>(Optional) Sets passwords in the localized key format. If you configure this keyword, the password can be any case-sensitive, alphanumeric string up to 130 characters.</td></tr><tr><td></td><td><code>engineID id</code></td><td>(Optional) Configures the SNMP Engine ID for a notification target user. The engineID format is a 12-digit colon-separated decimal number.</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 394.</p>	Syntax Description	<code>username</code>	Name of the user. The name can be any case-sensitive, alphanumeric string up to 32 characters.		<code>group-name</code>	(Optional) Name of the group. The name can be any case-sensitive, alphanumeric string up to 32 characters.		<code>auth</code>	(Optional) Sets authentication parameters for the user.		<code>md5</code>	Uses the MD5 algorithm for authentication.		<code>sha</code>	Uses the SHA algorithm for authentication.		<code>password</code>	User password. The password can be any case-sensitive, alphanumeric string up to 64 characters. If you configure the <code>localizedkey</code> keyword, the password can be any case-sensitive, alphanumeric string up to 130 characters		<code>priv</code>	(Optional) Sets encryption parameters for the user.		<code>aes-128</code>	(Optional) Sets the 128-byte AES algorithm for privacy.		<code>localizedkey</code>	(Optional) Sets passwords in the localized key format. If you configure this keyword, the password can be any case-sensitive, alphanumeric string up to 130 characters.		<code>engineID id</code>	(Optional) Configures the SNMP Engine ID for a notification target user. The engineID format is a 12-digit colon-separated decimal number.	<div>snmp-server user</div> <p>The <code>snmp-server user</code> command adds a user to a Simple Network Management Protocol (SNMP) group or modifies an existing user's parameters.</p> <p>To configure a remote user, specify the IP address or port number of the device where the user's remote SNMP agent resides. A remote agent's engine ID must be configured before remote users for that agent are configured. A user's authentication and privacy digests are derived from the engine ID and the user's password. The configuration command fails if the remote engine ID is not configured first.</p> <p>The <code>no snmp-server user</code> and default <code>snmp-server user</code> commands remove the user from an SNMP group by deleting the user command from <i>running-config</i>.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <pre>snmp-server user user_name group_name [AGENT] VERSION [ENGINE] [SECURITY] no snmp-server user user_name group_name [AGENT] VERSION default snmp-server user user_name group_name [AGENT] VERSION</pre> <p>Parameters</p> <ul style="list-style-type: none"><code>user_name</code> name of the user on the host that connects to the agent.<code>group_name</code> name of the group to which the user is associated.<code>AGENT</code> location of the host connecting to the SNMP agent. Configuration options include:<ul style="list-style-type: none"><code><no parameter></code> local SNMP agent.<code>remote addr [udp-port p_num]</code> remote SNMP agent location (IP address, udp port). <i>addr</i> denotes the IP address; <i>p_num</i> denotes the udp port socket. (default port is 162).<code>VERSION</code> SNMP version; options include:<ul style="list-style-type: none"><code>v1</code> SNMPv1.<code>v2c</code> SNMPv2c.<code>v3</code> SNMPv3; enables user-name match authentication.<code>ENGINE</code> engine ID used to localize passwords. Available only if <code>VERSION</code> is v3.<ul style="list-style-type: none"><code><no parameter></code> Passwords localized by SNMP copy specified by <i>agent</i>.<code>localized engineID</code> octet string of engineID.<code>SECURITY</code> Specifies authentication and encryption levels. Available only if <code>VERSION</code> is v3. Encryption is available only when authentication is configured.<ul style="list-style-type: none"><code><no parameter></code> no authentication or encryption.<code>auth a_meth a_pass [priv e_meth e_pass]</code> authentication and encryption parameters.<ul style="list-style-type: none"><i>a-meth</i> authentication method: options are md5 (HMAC-MD5-96) and sha (HMAC-SHA-96).<i>a-pass</i> authentication string for users receiving packets.<i>e-meth</i> encryption method: tions are aes (AES-128) and des (CBC-DES).<i>e-pass</i> encryption string for the users sending packets. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1999.</p>
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		<p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 1689; Arista User Manual, v. 4.11.1 (1/11/13), at 1374; Arista User Manual v. 4.10.3 (10/22/12), at 1141; Arista User Manual v. 4.9.3.2 (5/3/12), at 896; Arista User Manual v. 4.8.2 (11/18/11), at 703; Arista User Manual v. 4.7.3 (7/18/11), at 559.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display the EEE status on an interface:</p> <pre> switch# show interface ethernet2/6 Ethernet2/6 is down (Link not connected) admin state is up, Dedicated Interface Hardware: 10000 Ethernet, address: 0022.5579.de41 (bia 001b.54c1.af5d) MTU 1500 bytes, BW 10000000 Kbit, DLY 10 usec reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, medium is broadcast auto-duplex, auto-speed, media type is 10G Beacon is turned off Auto-Negotiation is turned off Input flow-control is off, output flow-control is off Auto-mdix is turned off Rate mode is shared Switchport monitor is off EtherType is 0x8100 EEE (efficient-ethernet) : n/a Last link flapped never Last clearing of "show interface" counters never 0 interface resets 30 seconds input rate 0 bits/sec, 0 packets/sec 30 seconds output rate 0 bits/sec, 0 packets/sec Load-Interval #2: 5 minute (300 seconds) </pre> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 514.</p>	<p>Example</p> <ul style="list-style-type: none"> This command assigns the MAC address of 001c.2804.17e1 to Ethernet interface 7, then displays interface parameters, including the assigned address. <pre> switch(config)#interface ethernet 7 switch(config-if-Et7)#mac-address 001c.2804.17e1 switch(config-if-Et7)#show interface ethernet 7 Ethernet3 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2) Description: b.e45 MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 seconds input rate 7.84 kbps (0.0% with framing), 10 packets/sec 5 seconds output rate 270 kbps (0.0% with framing), 24 packets/sec 1363799 packets input, 222736140 bytes Received 0 broadcasts, 290904 multicast 0 runts, 0 giants 0 input errors, 0 CRC, 0 alignment, 0 symbol 0 PAUSE input 2264927 packets output, 2348747214 bytes Sent 0 broadcasts, 28573 multicast 0 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output switch(config-if-Et7)# </pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 437.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 371; Arista User Manual, v. 4.11.1 (1/11/13), at 312; Arista User Manual v. 4.10.3 (10/22/12), at 270; Arista User Manual v. 4.9.3.2 (5/3/12), at 252.</p>

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Related Commands	Command	Description															
	show lldp tlv-select	Displays the LLDP TLV configuration.															
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	show lldp traffic interface ethernet	Displays the number of LLDP packets sent and received on the interface.															
	show running-config lldp	Displays the global LLDP configuration.															
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	lldp timer	Specifies the transmission frequency of LLDP updates in seconds.															

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td>show lldp holdtime</td><td>Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.</td></tr> <tr> <td></td><td>lldp reinit</td><td>Specifies the delay time in seconds for LLDP to initialize on any interface</td></tr> <tr> <td></td><td>lldp timer</td><td>Specifies the transmission frequency of LLDP updates in seconds.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 522.</p>	Related Commands	Command	Description		show lldp holdtime	Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.		lldp reinit	Specifies the delay time in seconds for LLDP to initialize on any interface		lldp timer	Specifies the transmission frequency of LLDP updates in seconds.	<p>lldp reinit</p> <p>The lldp reinit command specifies the delay time in seconds for LLDP to initialize on any interface.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 589.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 462; Arista User Manual, v. 4.11.1 (1/11/13), at 380.</p>
Related Commands	Command	Description												
	show lldp holdtime	Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.												
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <thead> <tr> <th>Related Commands</th><th>Command</th><th>Description</th></tr> </thead> <tbody> <tr> <td></td><td>show lldp traffic interface ethernet</td><td>Displays the number of LLDP packets sent and received on the interface.</td></tr> <tr> <td></td><td>show running-config lldp</td><td>Displays the global LLDP configuration.</td></tr> </tbody> </table> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 527.</p>	Related Commands	Command	Description		show lldp traffic interface ethernet	Displays the number of LLDP packets sent and received on the interface.		show running-config lldp	Displays the global LLDP configuration.	<p>show lldp traffic</p> <p>The show lldp traffic command displays LLDP counters, including the number of packets sent and received, and the number of packets discarded.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <p>show lldp traffic [INTERFACE]</p> <p>Parameters</p> <ul style="list-style-type: none"> • INTERFACE Interface type and numbers. Options include: <ul style="list-style-type: none"> — <no parameter> Display information for all interfaces. — ethernet <i>e_range</i> Ethernet interface range specified by <i>e_range</i>. — management <i>m_range</i> Management interface range specified by <i>m_range</i>. <p>Valid <i>e_range</i> and <i>m_range</i> formats include number, number range, or comma-delimited list of numbers and ranges.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 599.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 472; Arista User Manual, v. 4.11.1 (1/11/13), at 390.</p>			
Related Commands	Command	Description												
	show lldp traffic interface ethernet	Displays the number of LLDP packets sent and received on the interface.												
	show running-config lldp	Displays the global LLDP configuration.												

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>show ptp clock</div><div>To display the Precision Time Protocol (PTP) clock information, use the show ptp clock command.</div><div>show ptp clock</div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>None</div></div><div><div>Command Modes</div><div>Any command mode</div></div><div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div><div><div>Command History</div><div><div><div>Release</div><div>Modification</div></div><div><div>5.2(1)</div><div>This command was introduced.</div></div></div></div><div><div>Usage Guidelines</div><div>This command does not require a license.</div></div><div><div>Examples</div><div><div>This example shows how to display the PTP clock information:</div><div>switch# show ptp clock PTP Device Type: Boundary clock Clock Identity: 0:18:ba:ff:ff:d8: e:17 Clock Domain: 0 Number of PTP ports: 2 Priority1: 255 Priority2: 255 Clock Quality: Class: 248 Accuracy: 254 Offset (log variance): 65535 Offset From Master: 0 Mean Path Delay: 0 Steps removed: 1 Local clock time: Sun Jan 15 20:57:29 2011</div></div></div></div>	<div><div>Show PTP Clock and Offset</div><div>To display the Precision Time Protocol (PTP) local clock and offset, use the show ptp clock command.</div><div><div>The show ptp clock command displays the Precision Time Protocol (PTP) local clock and offset.</div><div>switch# show ptp clock PTP Mode: Boundary Clock Clock Identity: 0x00:1c:73:ff:ff:1e:83:24 Clock Domain: 1 Number of PTP ports: 24 Priority1: 128 Priority2: 128 Clock Quality: Class: 248 Accuracy: 0x30 Offset Scaled Log Variance: 0xffff Offset From Master: 0 Mean Path Delay: 0 Steps Removed: 0 switch#</div></div></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 275.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 217.</div>

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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>show ptp clock foreign-masters-record</div><div>To display information about the state of foreign masters known to the Precision Time Protocol (PTP) process, use the show ptp clocks foreign-masters-record command.</div><div>show ptp clock foreign-masters-record {interface [ethernet]}</div><div><table><tr><td>Syntax Description</td><td>interface</td><td>Specifies an interface.</td></tr><tr><td></td><td>ethernet</td><td>(Optional) Specifies an Ethernet interface.</td></tr></table></div><div><table><tr><td>Defaults</td><td>None</td></tr></table></div><div><table><tr><td>Command Modes</td><td>Any command mode</td></tr></table></div><div><table><tr><td>Supported User Roles</td><td>network-admin network-operator vdc-admin vdc-operator</td></tr></table></div><div><table><tr><td>Command History</td><td><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></td></tr></table></div><div><table><tr><td>Usage Guidelines</td><td>This command does not require a license.</td></tr></table></div><div><div><div>Examples</div><div>This example shows how to display information about the state of foreign masters known to the PTP process:</div><div>switch# show ptp clock foreign-masters-record interface ethernet 7/1 RP/0/0/CPU0:demo#show ptp clocks foreign-masters P1=Priority1, P2=Priority2, C=Class, A=Accuracy, OSLV=Offset-Scaled-Log-Variance, SR=Steps-Removed GM=Is grandmaster</div><div><table><tr><th>Interface</th><th>Clock-ID</th><th>P1</th><th>P2</th><th>C</th><th>A</th><th>OSLV</th><th>SR</th></tr><tr><td>Eth7/10</td><td>0:18:ba:ff:ff:d8: e:16 255 255</td><td>248</td><td>254</td><td>65535</td><td>0</td><td>GM</td></tr><tr><td>Eth7/1</td><td>0:18:ba:ff:ff:d8: e:16 255 255</td><td>248</td><td>254</td><td>65535</td><td>0</td><td>GM</td></tr></table></div></div></div></div>	Syntax Description	interface	Specifies an interface.		ethernet	(Optional) Specifies an Ethernet interface.	Defaults	None	Command Modes	Any command mode	Supported User Roles	network-admin network-operator vdc-admin vdc-operator	Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table>	Release	Modification	5.2(1)	This command was introduced.	Usage Guidelines	This command does not require a license.	Interface	Clock-ID	P1	P2	C	A	OSLV	SR	Eth7/10	0:18:ba:ff:ff:d8: e:16 255 255	248	254	65535	0	GM	Eth7/1	0:18:ba:ff:ff:d8: e:16 255 255	248	254	65535	0	GM	<div><div>Show PTP Foreign Master</div><div>To display information about the state of foreign masters known to the Precision Time Protocol (PTP) process, use the show ptp foreign-master-record command.</div><div><ul style="list-style-type: none">The show ptp foreign-master-records command displays information about the state of foreign masters known to the PTP process.</div><div>switch# show ptp clocks foreign-masters-record No Foreign Master Records switch#</div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 277.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 219-220.</div></div>
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	Interface	Clock-ID	P1	P2	C	A	OSLV	SR																
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<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>show ptp parent</div><div>To display information about the parent and grand master of the Precision Time Protocol (PTP) clock, use the <code>show ptp parent</code> command.</div><div>show ptp parent</div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>None</div></div><div><div>Command Modes</div><div>Any command mode</div></div><div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to display information about the parent and grand master of the PTP clock:</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0:18:ba:ff:ff:d8: e:16 Parent Port Number: 1546 Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0:18:ba:ff:ff:d8: e:16 Grandmaster Clock Quality: Class: 248 Accuracy: 254 Offset (log variance): 65535 Priority1: 255 Priority2: 255</div></div></div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>Show PTP Parent Information</div><div>To display information about the parent and grand master of the Precision Time Protocol (PTP) clock, use the <code>show ptp parent</code> command.</div><div><ul style="list-style-type: none">The <code>show ptp parent</code> command displays information about the parent and grand master of the Precision Time Protocol (PTP) clock.</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Parent Port Number: 0 Parent IP Address: N/A Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Grandmaster Clock Quality: Class: 248 Accuracy: 0x30 Offset Scaled Log Variance: 0xffff Priority1: 128 Priority2: 128 switch#</div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 275.</div><div>See also Arista User Manual v. 4.12.3 (7/17/13), at 217.</div></div>
	Release	Modification				
	5.2(1)	This command was introduced.				

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>show ptp parent</div> <div>To display information about the parent and grand master of the Precision Time Protocol (PTP) clock, use the show ptp parent command.</div> <div>show ptp parent</div> <div>Syntax Description<div>This command has no arguments or keywords.</div></div> <div>Defaults<div>None</div></div> <div>Command Modes<div>Any command mode</div></div> <div>SupportedUserRoles<div>network-admin network-operator vdc-admin vdc-operator</div></div> <div>Command History<table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div> <div>Usage Guidelines<div>This command does not require a license.</div></div> <div>Examples<div>This example shows how to display information about the parent and grand master of the PTP clock:</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0:18:ba:ff:ff:d8: e:16 Parent Port Number: 1546 Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0:18:ba:ff:ff:d8: e:16 Grandmaster Clock Quality: Class: 248 Accuracy: 254 Offset (log variance): 65535 Priority1: 255 Priority2: 255</div></div>	Release	Modification	5.2(1)	This command was introduced.	<div>show ptp parent</div> <div>The show ptp parent command displays information about the parent and grand master of the Precision Time Protocol (PTP) clock.</div> <div>Platform<div>Arad, FM6000</div></div> <div>Command Mode<div>Privileged EXEC</div></div> <div>Command Syntax<div>show ptp parent</div></div> <div>Examples<div><ul style="list-style-type: none">This command shows how to display information about the parent and master of the PTP clock.</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Parent Port Number: 0 Parent IP Address: N/A Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Grandmaster Clock Quality: Class: 248 Accuracy: 0x30 Offset Scaled Log Variance: 0xffff Priority1: 128 Priority2: 128 switch#</div></div>	<div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 352.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 285; Arista User Manual, v. 4.11.1 (1/11/13), at 231.</div>
	Release	Modification					
5.2(1)	This command was introduced.						

Copyright Registration Information	Cisco	Arista				
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>show ptp time-property</div><div>To display the Precision Time Protocol (PTP) clock properties, use the show ptp time-property command.</div><div>show ptp time-property</div></div> <div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div> <div><div>Defaults</div><div>None</div></div> <div><div>Command Modes</div><div>Any command mode</div></div> <div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div> <div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div> <div><div>Usage Guidelines</div><div>This command does not require a license.</div></div> <div><div>Examples</div><div>This example shows how to display the PTP clock properties:</div><div>switch# show ptp time-property PTP CLOCK TIME PROPERTY: Current UTC Offset valid: 0 Current UTC Offset: 33 Leap59: 0 Leap61: 0 Time Traceable: 0 Frequency Traceable: 0 PTP Timescale: 0 Time Source: 0xA0 (internal Oscillator)</div></div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>Show PTP Clock Properties</div><div>To display the Precision Time Protocol (PTP) clock properties, use the show ptp time-property command.</div><div><ul style="list-style-type: none">The show ptp time-property command displays the Precision Time Protocol (PTP) clock properties.</div><div>switch# show ptp time-property Current UTC offset valid: False Current UTC offset: 0 Leap 59: False Leap 61: False Time Traceable: False Frequency Traceable: False PTP Timescale: False Time Source: 0x0 switch#</div></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 275-76.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 218.</div>
	Release	Modification				
5.2(1)	This command was introduced.					

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>show ptp time-property</div><div>To display the Precision Time Protocol (PTP) clock properties, use the show ptp time-property command.</div><div>show ptp time-property</div><div>Syntax Description<div>This command has no arguments or keywords.</div></div><div>Defaults<div>None</div></div><div>Command Modes<div>Any command mode</div></div><div>SupportedUserRoles<div>network-admin network-operator vdc-admin vdc-operator</div></div><div>Command History<table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div><div>Usage Guidelines<div>This command does not require a license.</div></div><div>Examples<div>This example shows how to display the PTP clock properties:</div><div>switch# show ptp time-property PTP CLOCK TIME PROPERTY: Current UTC Offset valid: 0 Current UTC Offset: 33 Leap59: 0 Leap61: 0 Time Traceable: 0 Frequency Traceable: 0 PTP Timescale: 0 Time Source: 0xA0 (internal Oscillator)</div></div></div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>show ptp time-property</div><div>The show ptp time-property command displays the Precision Time Protocol (PTP) clock properties.</div><div>Platform<div>Arad, FM6000</div></div><div>Command Mode<div>Privileged EXEC</div></div><div>Command Syntax<div>show ptp time-property</div></div><div>Examples<div><div>This command shows the PTP clock properties.</div><div>switch# show ptp time-property Current UTC offset valid: False Current UTC offset: 0 Leap 59: False Leap 61: False Time Traceable: False Frequency Traceable: False PTP Timescale: False Time Source: 0x0 switch#</div></div></div></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 354.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 287; Arista User Manual, v. 4.11.1 (1/11/13), at 233.</div>
	Release	Modification				
5.2(1)	This command was introduced.					

Examples

This example shows how to display the SNMP information:

```
switch(config)# show snmp
sys contact:
sys location: anyplace, Anywhere

0 SNMP packets input
  0 Bad SNMP versions
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
0 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad values errors
  0 General errors
```

Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 634.

Cisco NX-OS 6.2

Effective date of
registration:
11/13/2014

Example

- This command configures *xyz-1234* as the chassis-ID string, then displays the result.

```
switch(config)#snmp-server chassis-id xyz-1234
switch(config)#show snmp
Chassis: xyz-1234 <---chassis ID

8 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  8 Number of requested variables
  0 Number of altered variables
  4 Get-request PDUs
  4 Get-next PDUs
  0 Set-request PDUs
21 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  8 Response PDUs
  0 Trap PDUs
SNMP logging: enabled
Logging to taccon.162
SNMP agent enabled
switch(config)#
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 354.

See also Arista User Manual v. 4.12.3 (7/17/13), at 1657-58; Arista User Manual, v. 4.11.1 (1/11/13), at 1344-45; Arista User Manual v. 4.10.3 (10/22/12), at 1111; Arista User Manual v. 4.9.3.2 (5/3/12), at 867; Arista User Manual v. 4.8.2 (11/18/11), at 678; Arista User Manual v. 4.7.3 (7/18/11), at 549.

show snmp engineID

To display the Simple Network Management Protocol (SNMP) engine ID, use the `show snmp engineID` command.

`show snmp engineID`

Syntax Description This command has no arguments or keywords.

Defaults None

Command Modes Any command mode

Supported User Roles network-admin
network-operator
vdc-admin
vdc-operator

Command History	Release	Modification
	4.0(1)	This command was introduced.

Usage Guidelines This command does not require a license.

Examples This example shows how to display the SNMP engine ID:

```
switch(config)# show snmp engineID
Local SNMP engineID: [Hex] 80000009030005300A0B0C
[Dec] 128:000:000:009:003:000:005:048:010:011:012
```

Related Commands	Command	Description
	snmp-server user	Configures SNMP target notification users.

Cisco Nexus 7000 Series NX-OS System Management Command Reference (2013), at 639.

show snmp engineID

The `show snmp engineID` command displays the identification of the local Simple Network Management Protocol (SNMP) engine and of all remote engines that are configured on the switch.

Platform all
Command Mode EXEC

Command Syntax

`show snmp engineID`

Example

- This command displays the ID of the local SNMP engine.

```
switch>show snmp engineid
Local SNMP EngineID: f5717f001c730436d700
switch>
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1978.

See also Arista User Manual v. 4.12.3 (7/17/13), at 1668; Arista User Manual, v. 4.11.1 (1/11/13), at 1355; Arista User Manual v. 4.10.3 (10/22/12), at 1122; Arista User Manual v. 4.9.3.2 (5/3/12), at 878; Arista User Manual v. 4.8.2 (11/18/11), at 686; Arista User Manual v. 4.7.3 (7/18/11), at 542.

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Precision Time Protocol</p> <p>The Precision Time Protocol (PTP) is a time synchronization protocol for nodes distributed across a network. Its hardware timestamp feature provides greater accuracy than other time synchronization protocols such as Network Time Protocol (NTP). For more information about PTP, see Chapter 4, "Configuring PTP."</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 1-3.</p>	<p>5.3.2 Precision Time Protocol (PTP)</p> <p>The Precision Time Protocol (PTP) can substantially enhance the accuracy of real-time clocks in networked devices by providing sub-microsecond clock synchronization. Inbound clock signals are organized into a master-slave hierarchy. PTP identifies the switch port that is connected to the device with the most precise clock. This clock is referred to as the master clock. All the other devices on the network synchronize their clocks with the master and are referred to as slaves.</p> <p>The master clock sends out a sync message every second. The slave clock sends a delay request message to the master clock noting the time it was sent in order to measure and eliminate packet delays. The master clock then replies with the time stamp the delay message was received. The slave clock then computes the master clock time compensated for delays and finalizes synchronization. Constantly exchanged timing messages ensure continued synchronization.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 270.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 213; Arista User Manual, v. 4.11.1 (1/11/13), at 163.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>SNMP</p> <p>The Simple Network Management Protocol (SNMP) is an application-layer protocol that provides a message format for communication between SNMP managers and agents. SNMP provides a standardized framework and a common language used for the monitoring and management of devices in a network. For more information, see Chapter 11, "Configuring SNMP."</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 1-5.</p>	<p>37.2 SNMP Conceptual Overview</p> <p>Simple Network Management Protocol (SNMP) is an application-layer protocol that provides a standardized framework and a common language to monitor and manage network devices.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1961.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1651; Arista User Manual, v. 4.11.1 (1/11/13), at 1338; Arista User Manual v. 4.10.3 (10/22/12), at 1105; Arista User Manual v. 4.9.3.2 (5/3/12), at 861; Arista User Manual v. 4.8.2 (11/18/11), at 673; Arista User Manual v. 4.7.3 (7/18/11), at 529.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>SNMP</p> <p>The Simple Network Management Protocol (SNMP) is an application-layer protocol that provides a message format for communication between SNMP managers and agents. SNMP provides a standardized framework and a common language used for the monitoring and management of devices in a network. For more information, see Chapter 11, "Configuring SNMP."</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 1-5.</p>	<p>Chapter 37 SNMP</p> <p>SNMP is an application-layer protocol that provides a standardized framework and a common language to monitor and manage network devices.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 43.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 37; Arista User Manual, v. 4.11.1 (1/11/13), at 31; Arista User Manual v. 4.10.3 (10/22/12), at 28; Arista User Manual v. 4.9.3.2 (5/3/12), at 24; Arista User Manual v. 4.8.2 (11/18/11), at 20; Arista User Manual v. 4.7.3 (7/18/11), at 18.</p>

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NTP sets the source IP address for all NTP packets based on the address of the interface through which the NTP packets are sent. You can configure NTP to use a specific source IP address.

To configure the NTP source IP address, use the following command in global configuration mode:

Command	Purpose
[no] ntp source <i>ip-address</i>	Configures the source IP address for all NTP packets. The <i>ip-address</i> can be in IPv4 or IPv6 format.
Example.	
switch(config)# ntp source 192.0.2.1	

Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 3-16.

Configure the Source IP

To configure the source IP address for all PTP packets, use the **ptp source ip** command.

- The **ptp source ip** command configures the source IP address of 10.0.2.1 for all PTP packets.

```
switch(config)# ptp source ip 10.0.2.1
switch(config)#
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 272.

See also Arista User Manual v. 4.12.3 (7/17/13), at 215.

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This example shows how to configure an NTP server and peer, enable NTP authentication, enable NTP logging, and then save the configuration in startup so that it is saved across reboots and restarts:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ntp server 192.0.2.105 key 42
switch(config)# ntp peer 2001:db8::4101
switch(config)# show ntp peers
-----
Peer IP Address      Serv/Peer
-----
2001:db8::4101      Peer (configured)
192.0.2.105         Server (configured)
switch(config)# ntp authentication-key 42 md5 aNiceKey
switch(config)# show ntp authentication-keys
-----
Auth key      MD5 String
-----
42            aNicekey
switch(config)# ntp trusted-key 42
switch(config)# show ntp trusted-keys
Trusted Keys:
42
switch(config)# ntp authenticate
switch(config)# show ntp authentication-status
Authentication enabled.
switch(config)# ntp logging
switch(config)# show ntp logging
NTP logging enabled.
switch(config)# copy running-config startup-config
[*****] 100%
switch(config)#
```

Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 3-25.

Example

- These commands configure the switch to authenticate NTP packets using key 328 with the plaintext password "timeSync."

```
switch(config)# ntp authentication-key 328 md5 timeSync
switch(config)# ntp trusted key 328
switch(config)# ntp authenticate
switch(config)#
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 270.

Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><td>Step 4</td><td><code>[no] ptp domain number</code> Example: <code>switch(config)# ptp domain 1</code></td><td>(Optional) Configures the domain number to use for this clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. The range is from 0 to 128.</td></tr><tr><td>Step 5</td><td><code>[no] ptp priority1 value</code> Example: <code>switch(config)# ptp priority1 10</code></td><td>(Optional) Configures the priority1 value to use when advertising this clock. This value overrides the default criteria (clock quality, clock class, and so on) for best master clock selection. Lower values take precedence. The range is from 0 to 255.</td></tr><tr><td>Step 6</td><td><code>[no] ptp priority2 value</code> Example: <code>switch(config)# ptp priority2 20</code></td><td>(Optional) Configures the priority2 value to use when advertising this clock. This value is used to decide between two devices that are otherwise equally matched in the default criteria. For example, you can use the priority2 value to give a specific switch priority over other identical switches. The range is from 0 to 255.</td></tr><tr><td></td><td></td><td></td></tr></table>	Step 4	<code>[no] ptp domain number</code> Example: <code>switch(config)# ptp domain 1</code>	(Optional) Configures the domain number to use for this clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. The range is from 0 to 128.	Step 5	<code>[no] ptp priority1 value</code> Example: <code>switch(config)# ptp priority1 10</code>	(Optional) Configures the priority1 value to use when advertising this clock. This value overrides the default criteria (clock quality, clock class, and so on) for best master clock selection. Lower values take precedence. The range is from 0 to 255.	Step 6	<code>[no] ptp priority2 value</code> Example: <code>switch(config)# ptp priority2 20</code>	(Optional) Configures the priority2 value to use when advertising this clock. This value is used to decide between two devices that are otherwise equally matched in the default criteria. For example, you can use the priority2 value to give a specific switch priority over other identical switches. The range is from 0 to 255.				<p>ptp domain</p> <p>The ptp domain command configures the domain number to use for the clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. To remove PTP settings, use the no form of this command.</p> <table><tr><td>Platform</td><td>Arad, FM6000</td></tr><tr><td>Command Mode</td><td>Global Configuration</td></tr></table> <p>Command Syntax</p> <pre>ptp domain domain number no ptp domain default ptp domain</pre> <p>Parameters</p> <ul style="list-style-type: none"><code>domain_number</code> The domain number to use for the clock. Value ranges from 0 to 255. <p>Examples</p> <ul style="list-style-type: none">This command shows how to configure domain 1 for use with a clock.<pre>switch(config)# ptp domain 1 switch(config)#</pre>This command removes the configured domain 1 for use with a clock.<pre>switch(config)# no ptp domain 1 switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 319.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 257; Arista User Manual, v. 4.11.1 (1/11/13), at 204.</p>	Platform	Arad, FM6000	Command Mode	Global Configuration
	Step 4	<code>[no] ptp domain number</code> Example: <code>switch(config)# ptp domain 1</code>	(Optional) Configures the domain number to use for this clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. The range is from 0 to 128.															
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Step 4	<code>[no] ptp domain number</code> Example: <code>switch(config)# ptp domain 1</code>	(Optional) Configures the domain number to use for this clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. The range is from 0 to 128.
Step 5	<code>[no] ptp priority1 value</code> Example: <code>switch(config)# ptp priority1 10</code>	(Optional) Configures the priority1 value to use when advertising this clock. This value overrides the default criteria (clock quality, clock class, and so on) for best master clock selection. Lower values take precedence. The range is from 0 to 255.
Step 6	<code>[no] ptp priority2 value</code> Example: <code>switch(config)# ptp priority2 20</code>	(Optional) Configures the priority2 value to use when advertising this clock. This value is used to decide between two devices that are otherwise equally matched in the default criteria. For example, you can use the priority2 value to give a specific switch priority over other identical switches. The range is from 0 to 255.

Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 4-6.

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ptp priority1

The `ptp priority1` command configures the priority1 value to use when advertising the clock. This value overrides the default criteria for best master clock selection. Lower values take precedence. The range is from 0 to 255. To remove PTP settings, use the no form of this command.

Platform Arad, FM6000
Command Mode Global Configuration

Command Syntax

```
ptp priority1 priority_rate
no ptp priority1
default ptp priority1
```

Parameters

- `priority_rate` The value to override the default criteria (clock quality, clock class, etc.) for best master clock selection. Lower values take precedence. Value ranges from 0 to 255. The default is 128.

Examples

- This command configures the preference level for a clock; slave devices use the priority1 value when selecting a master clock.

```
switch(config)# ptp priority1 120
switch(config)#
```

- This command removes the configured the preference level for a clock.

```
switch(config)# no ptp priority1
switch(config)#
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 326.

See also Arista User Manual v. 4.13.6F (4/14/2014), at 318; Arista User Manual v. 4.12.3 (7/17/13), at 262; Arista User Manual, v. 4.11.1 (1/11/13), at 208.

<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<table border="1"> <tr> <td data-bbox="296 181 359 201">Step 4</td><td data-bbox="359 181 722 261"> <p>[no] ptp domain <i>number</i></p> <p>Example: switch(config)# ptp domain 1</p> </td><td data-bbox="722 181 1142 261"> <p>(Optional) Configures the domain number to use for this clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. The range is from 0 to 128.</p> </td></tr> <tr> <td data-bbox="296 272 359 292">Step 5</td><td data-bbox="359 272 722 352"> <p>[no] ptp priority1 <i>value</i></p> <p>Example: switch(config)# ptp priority1 10</p> </td><td data-bbox="722 272 1142 352"> <p>(Optional) Configures the priority1 value to use when advertising this clock. This value overrides the default criteria (clock quality, clock class, and so on) for best master clock selection. Lower values take precedence. The range is from 0 to 255.</p> </td></tr> <tr> <td data-bbox="296 391 359 410">Step 6</td><td data-bbox="359 391 722 470"> <p>[no] ptp priority2 <i>value</i></p> <p>Example: switch(config)# ptp priority2 20</p> </td><td data-bbox="722 391 1142 537"> <p>(Optional) Configures the priority2 value to use when advertising this clock. This value is used to decide between two devices that are otherwise equally matched in the default criteria. For example, you can use the priority2 value to give a specific switch priority over other identical switches. The range is from 0 to 255.</p> </td></tr> </table> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 4-6.</p>	Step 4	<p>[no] ptp domain <i>number</i></p> <p>Example: switch(config)# ptp domain 1</p>	<p>(Optional) Configures the domain number to use for this clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. The range is from 0 to 128.</p>	Step 5	<p>[no] ptp priority1 <i>value</i></p> <p>Example: switch(config)# ptp priority1 10</p>	<p>(Optional) Configures the priority1 value to use when advertising this clock. This value overrides the default criteria (clock quality, clock class, and so on) for best master clock selection. Lower values take precedence. The range is from 0 to 255.</p>	Step 6	<p>[no] ptp priority2 <i>value</i></p> <p>Example: switch(config)# ptp priority2 20</p>	<p>(Optional) Configures the priority2 value to use when advertising this clock. This value is used to decide between two devices that are otherwise equally matched in the default criteria. For example, you can use the priority2 value to give a specific switch priority over other identical switches. The range is from 0 to 255.</p>	<p>ptp priority2</p> <p>The ptp priority2 command configures the priority2 value to use when advertising this clock. This value is used to decide between two devices that are otherwise equally matched in the default criteria. For example, you can use the priority2 value to give a specific switch priority over other identical switches. The range is from 0 to 255. To remove PTP settings, use the no form of this command.</p> <p>Platform Arad, FM6000 Command Mode Global Configuration</p> <p>Command Syntax</p> <pre>ptp priority2 priority_rate no ptp priority2 default ptp priority2</pre> <p>Parameters</p> <ul style="list-style-type: none"> <i>priority_rate</i> Sets a secondary preference level for a clock; slave devices use the priority2 value when selecting a master clock. Value ranges from 0 to 255. <p>Examples</p> <ul style="list-style-type: none"> This command sets a secondary preference level for a clock to 128. <pre>switch(config)# ptp priority2 128 switch(config)#</pre> This command removes the secondary preference level for a clock. <pre>switch(config)# no ptp priority2 switch(config)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 327.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 319; Arista User Manual v. 4.12.3 (7/17/13), at 263; Arista User Manual, v. 4.11.1 (1/11/13), at 209.</p>
Step 4	<p>[no] ptp domain <i>number</i></p> <p>Example: switch(config)# ptp domain 1</p>	<p>(Optional) Configures the domain number to use for this clock. PTP domains allow you to use multiple independent PTP clocking subdomains on a single network. The range is from 0 to 128.</p>									
Step 5	<p>[no] ptp priority1 <i>value</i></p> <p>Example: switch(config)# ptp priority1 10</p>	<p>(Optional) Configures the priority1 value to use when advertising this clock. This value overrides the default criteria (clock quality, clock class, and so on) for best master clock selection. Lower values take precedence. The range is from 0 to 255.</p>									
Step 6	<p>[no] ptp priority2 <i>value</i></p> <p>Example: switch(config)# ptp priority2 20</p>	<p>(Optional) Configures the priority2 value to use when advertising this clock. This value is used to decide between two devices that are otherwise equally matched in the default criteria. For example, you can use the priority2 value to give a specific switch priority over other identical switches. The range is from 0 to 255.</p>									
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>BEFORE YOU BEGIN</p> <p>Make sure that you are in the correct VDC. To change the VDC, use the switchto vdc command.</p> <p>Make sure that you have globally enabled PTP on the device and configured the source IP address for PTP communication.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 4-7.</p>	<p>ptp delay-req interval</p> <p>The ptp delay-req interval command specifies the time recommended to the slave devices to send delay request messages. You must enable PTP on the switch first and configure the source IP address for PTP communication. To remove the minimum interval configuration for PTP delay-request messages, use the no form of this command.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 318.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 256; Arista User Manual, v. 4.11.1 (1/11/13), at 202.</p>									

<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Step 4 <code>[no] ptp announce {interval seconds timeout count}</code></p> <p>Example: <code>switch(config-if)# ptp announce interval 1</code></p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 4-8.</p>	<p>ptp announce interval</p> <p>The <code>ptp announce interval</code> command configures the interval between PTP announcement messages on or the number of PTP intervals before a timeout occurs. To disable this feature, use the no form of this command.</p> <p>Platform Arad, FM6000 Command Mode Interface-Ethernet Configuration Interface-Port Channel Configuration</p> <p>Command Syntax</p> <pre>ptp announce interval log_interval no ptp announce interval default ptp announce interval</pre> <p>Parameters</p> <ul style="list-style-type: none"> <code>log_interval</code> The number of log seconds between PTP announcement message (base 2 log (seconds)). Value ranges from 0 to 4; default value is 1. <p>Examples</p> <ul style="list-style-type: none"> This command shows how to configure the interval between PTP announce messages on an interface. <pre>switch(config)# interface ethernet 5 switch(config-if-Et5)# ptp announce interval 1 switch(config-if-Et5)#</pre> <ul style="list-style-type: none"> This command removes the configured interval between PTP announce messages on interface Ethernet 5. <pre>switch(config)# interface ethernet 5 switch(config-if-Et5)# no ptp announce interval switch(config-if-Et5)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 315.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 252; Arista User Manual, v. 4.11.1 (1/11/13), at 199.</p>
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Step 5 [no] ptp delay-request minimum interval seconds</p> <p>Example: switch(config-if)# ptp delay-request minimum interval 3</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 4-8.</p>	<p>ptp delay-req interval</p> <p>The ptp delay-req interval command specifies the time recommended to the slave devices to send delay request messages. You must enable PTP on the switch first and configure the source IP address for PTP communication. To remove the minimum interval configuration for PTP delay-request messages, use the no form of this command.</p> <p>Platform Arad, FM6000 Command Mode Interface-Ethernet Configuration Interface-Port Channel Configuration</p> <p>Command Syntax</p> <pre>ptp delay-req interval log_interval no ptp delay-req interval default ptp delay-req interval</pre> <p>Parameters</p> <ul style="list-style-type: none"> log_interval The range is -1 second to 8 seconds. The default is 5 log(seconds). <p>Examples</p> <ul style="list-style-type: none"> This command shows how to configure the minimum interval allowed between PTP delay-request messages. <pre>switch(config)# interface ethernet 5 switch(config-if-Et5)# ptp delay-request interval 3 switch(config-if-Et5)#</pre> This command removes the configured minimum interval allowed between PTP delay-request messages. <pre>switch(config)# interface ethernet 5 switch(config-if-Et5)# no ptp delay-request interval switch(config-if-Et5)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 318.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 256; Arista User Manual, v. 4.11.1 (1/11/13), at 202.</p>
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Verifying the PTP Configuration

To display the PTP configuration, perform one of the following tasks:

Command	Purpose
<code>show ptp brief</code>	Displays the PTP status.
<code>show ptp clock</code>	Displays the properties of the local clock.
<code>show ptp clock foreign-masters record</code> [interface interface slot/port]	Displays the state of foreign masters known to the PTP process. For each foreign master, the output displays the clock identity, basic clock properties, and whether the clock is being used as a grandmaster.
<code>show ptp corrections</code>	Displays the last few PTP corrections.
<code>show ptp parent</code>	Displays the properties of the PTP parent.
<code>show ptp port interface interface slot/port</code>	Displays the status of the PTP port.
<code>show ptp time-property</code>	Displays the properties of the PTP clock.

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Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 4-9.

show ptp foreign-master-record

The `show ptp foreign-master-record` command displays information about the state of foreign masters known to the Precision Time Protocol (PTP) process.

Platform Arad, FM6000
Command Mode EXEC

Command Syntax

`show ptp foreign-master-record`

Examples

- This command shows how to display information about the state of foreign masters known to the PTP process.

```
switch# show ptp clocks foreign-masters-record
No Foreign Master Records
switch#
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 349.

See also Arista User Manual v. 4.12.3 (7/17/13), at 282; Arista User Manual, v. 4.11.1 (1/11/13), at 228.

<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>SNMP Functional Overview</p> <p>The SNMP framework consists of three parts:</p> <ul style="list-style-type: none"> • An SNMP manager—The system used to control and monitor the activities of network devices using SNMP. • An SNMP agent—The software component within the managed device that maintains the data for the device and reports these data, as needed, to managing systems. Cisco NX-OS supports the agent and MIB. To enable the SNMP agent, you must define the relationship between the manager and the agent. • A managed information base (MIB)—The collection of managed objects on the SNMP agent. <p>SNMP is defined in RFCs 3411 to 3418.</p> <p>Cisco NX-OS supports SNMPv1, SNMPv2c, and SNMPv3. Both SNMPv1 and SNMPv2c use a community-based form of security.</p> <p>Cisco NX-OS supports SNMP over IPv6.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 11-2.</p>	<p>37.2.3 SNMP Versions</p> <p>Arista switches support the following SNMP versions:</p> <ul style="list-style-type: none"> • SNMPv1: The Simple Network Management Protocol, defined in RFC 1157. Security is based on community strings. • SNMPv2c: Community-string based Administrative Framework for SNMPv2, defined in RFC 1901 RFC 1905, and RFC 1906. SNMPv2c uses the community-based security model of SNMPv1. • SNMPv3: Version 3 is an interoperable standards-based protocol defined in RFCs 2273 to 2275. SNMPv3 provides secure access to devices by authenticating and encrypting packets. <p>The security features provided in SNMPv3 are as follows:</p> <ul style="list-style-type: none"> — <i>Message integrity:</i> Ensures packets are not tampered with in transit. — <i>Authentication:</i> Determines the message is received from a valid source. — <i>Encryption:</i> Scrambling packet contents to prevent an unauthorized source from learning it. <p>Both SNMPv1 and SNMPv2c use a community-based form of security. The community of managers able to access the agent MIB is controlled by a password.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 349.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 (11/18/11), at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
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<p>Cisco NX-OS 5.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>SNMP Functional Overview</p> <p>The SNMP framework consists of three parts:</p> <ul style="list-style-type: none"> • An SNMP manager—The system used to control and monitor the activities of network devices using SNMP. • An SNMP agent—The software component within the managed device that maintains the data for the device and reports these data, as needed, to managing systems. Cisco NX-OS supports the agent and MIB. To enable the SNMP agent, you must define the relationship between the manager and the agent. • A managed information base (MIB)—The collection of managed objects on the SNMP agent. <p>SNMP is defined in RFCs 3411 to 3418.</p> <p>Cisco NX-OS supports SNMPv1, SNMPv2c, and SNMPv3. Both SNMPv1 and SNMPv2c use a community-based form of security.</p> <p>Cisco NX-OS supports SNMP over IPv6.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 5.x (2010), at 10-2.</p>	<p>37.2.3 SNMP Versions</p> <p>Arista switches support the following SNMP versions:</p> <ul style="list-style-type: none"> • SNMPv1: The Simple Network Management Protocol, defined in RFC 1157. Security is based on community strings. • SNMPv2c: Community-string based Administrative Framework for SNMPv2, defined in RFC 1901 RFC 1905, and RFC 1906. SNMPv2c uses the community-based security model of SNMPv1. • SNMPv3: Version 3 is an interoperable standards-based protocol defined in RFCs 2273 to 2275. SNMPv3 provides secure access to devices by authenticating and encrypting packets. <p>The security features provided in SNMPv3 are as follows:</p> <ul style="list-style-type: none"> — <i>Message integrity:</i> Ensures packets are not tampered with in transit. — <i>Authentication:</i> Determines the message is received from a valid source. — <i>Encryption:</i> Scrambling packet contents to prevent an unauthorized source from learning it. <p>Both SNMPv1 and SNMPv2c use a community-based form of security. The community of managers able to access the agent MIB is controlled by a password.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 349.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 (11/18/11), at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
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<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>Cisco NX-OS supports SNMPv1, SNMPv2c and SNMPv3. Both SNMPv1 and SNMPv2c use a community-based form of security.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 4.0 (2008), at 10-2.</p>	<p>37.2.3 SNMP Versions</p> <p>Arista switches support the following SNMP versions:</p> <ul style="list-style-type: none"> • SNMPv1: The Simple Network Management Protocol, defined in RFC 1157. Security is based on community strings. • SNMPv2c: Community-string based Administrative Framework for SNMPv2, defined in RFC 1901 RFC 1905, and RFC 1906. SNMPv2c uses the community-based security model of SNMPv1. • SNMPv3: Version 3 is an interoperable standards-based protocol defined in RFCs 2273 to 2275. SNMPv3 provides secure access to devices by authenticating and encrypting packets. <p>The security features provided in SNMPv3 are as follows:</p> <ul style="list-style-type: none"> — <i>Message integrity:</i> Ensures packets are not tampered with in transit. — <i>Authentication:</i> Determines the message is received from a valid source. — <i>Encryption:</i> Scrambling packet contents to prevent an unauthorized source from learning it. <p>Both SNMPv1 and SNMPv2c use a community-based form of security. The community of managers able to access the agent MIB is controlled by a password.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 349.</p> <p><i>See also</i> Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.8.2 (11/18/11), at 675; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
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SNMPv3

SNMPv3 provides secure access to devices by a combination of authenticating and encrypting frames over the network. The security features provided in SNMPv3 are as follows:

- **Message integrity**—Ensures that a packet has not been tampered with while it was in-transit.
- **Authentication**—Determines that the message is from a valid source.
- **Encryption**—Scrambles the packet contents to prevent it from being seen by unauthorized sources.

SNMPv3 provides for both security models and security levels. A security model is an authentication strategy that is set up for a user and the role in which the user resides. A security level is the permitted level of security within a security model. A combination of a security model and a security level determines which security mechanism is employed when handling an SNMP packet.

This section includes the following topics:

- Security Models and Levels for SNMPv1, v2, v3, page 11-4
- User-Based Security Model, page 11-5
- CLI and SNMP User Synchronization, page 11-5

Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 11-3.

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37.2.3 SNMP Versions

Arista switches support the following SNMP versions:

- **SNMPv1:** The Simple Network Management Protocol, defined in RFC 1157. Security is based on community strings.
- **SNMPv2c:** Community-string based Administrative Framework for SNMPv2, defined in RFC 1901, RFC 1905, and RFC 1906. SNMPv2c uses the community-based security model of SNMPv1.
- **SNMPv3:** Version 3 is an interoperable standards-based protocol defined in RFCs 2273 to 2275. SNMPv3 provides secure access to devices by authenticating and encrypting packets.

The security features provided in SNMPv3 are as follows:

- **Message integrity:** Ensures packets are not tampered with in transit.
- **Authentication:** Determines the message is received from a valid source.
- **Encryption:** Scrambling packet contents to prevent an unauthorized source from learning it.

Both SNMPv1 and SNMPv2c use a community-based form of security. The community of managers able to access the agent MIB is controlled by a password.

SNMPv2c support includes a bulk retrieval mechanism and more detailed error message reporting. The bulk retrieval mechanism supports the retrieval of tables and large quantities of information, minimizing the number of round-trips required. SNMPv2c error handling includes expanded error codes that distinguish different kinds of error conditions; these conditions are reported through a single error code in SNMPv1. SNMPv2c error return codes report error type.

SNMPv3 is a security model which defines an authentication strategy that is configured for a user and the group in which the user resides. A security level is the permitted level of security within the model. A combination of a security model and a security level determines the security mechanism employed to handle an SNMP packet.

Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 349.

See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107-08; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.7.3 (7/18/11), at 531.

SNMPv3

SNMPv3 provides secure access to devices by a combination of authenticating and encrypting frames over the network. The security features provided in SNMPv3 are as follows:

- **Message integrity**—Ensures that a packet has not been tampered with while it was in-transit.
- **Authentication**—Determines that the message is from a valid source.
- **Encryption**—Scrambles the packet contents to prevent it from being seen by unauthorized sources.

SNMPv3 provides for both security models and security levels. A security model is an authentication strategy that is set up for a user and the role in which the user resides. A security level is the permitted level of security within a security model. A combination of a security model and a security level determines which security mechanism is employed when handling an SNMP packet.

Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 5.x (2010), at 10-2.

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37.2.3 SNMP Versions

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- **SNMPv1:** The Simple Network Management Protocol, defined in RFC 1157. Security is based on community strings.
- **SNMPv2c:** Community-string based Administrative Framework for SNMPv2, defined in RFC 1901, RFC 1905, and RFC 1906. SNMPv2c uses the community-based security model of SNMPv1.
- **SNMPv3:** Version 3 is an interoperable standards-based protocol defined in RFCs 2273 to 2275. SNMPv3 provides secure access to devices by authenticating and encrypting packets.

The security features provided in SNMPv3 are as follows:

- **Message integrity:** Ensures packets are not tampered with in transit.
- **Authentication:** Determines the message is received from a valid source.
- **Encryption:** Scrambling packet contents to prevent an unauthorized source from learning it.

Both SNMPv1 and SNMPv2c use a community-based form of security. The community of managers able to access the agent MIB is controlled by a password.

SNMPv2c support includes a bulk retrieval mechanism and more detailed error message reporting. The bulk retrieval mechanism supports the retrieval of tables and large quantities of information, minimizing the number of round-trips required. SNMPv2c error handling includes expanded error codes that distinguish different kinds of error conditions; these conditions are reported through a single error code in SNMPv1. SNMPv2c error return codes report error type.

SNMPv3 is a security model which defines an authentication strategy that is configured for a user and the group in which the user resides. A security level is the permitted level of security within the model. A combination of a security model and a security level determines the security mechanism employed to handle an SNMP packet.

Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 349.

See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107-08; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.7.3 (7/18/11), at 531.

<p>Cisco NX-OS 4.0</p> <p>Effective date of registration: 11/13/2014</p>	<p>SNMPv3</p> <p>SNMPv3 provides secure access to devices by a combination of authenticating and encrypting frames over the network. The security features provided in SNMPv3 are as follows:</p> <ul style="list-style-type: none"> • Message integrity—Ensures that a packet has not been tampered with while it was in-transit. • Authentication—Determines that the message is from a valid source. • Encryption—Scrambles the packet contents to prevent it from being seen by unauthorized sources. <p>SNMPv3 provides for both security models and security levels. A security model is an authentication strategy that is set up for a user and the role in which the user resides. A security level is the permitted level of security within a security model. A combination of a security model and a security level determines which security mechanism is employed when handling an SNMP packet.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 4.0 (2008), at 7-2.</p>	<p>37.2.3 SNMP Versions</p> <p>Arista switches support the following SNMP versions:</p> <ul style="list-style-type: none"> • SNMPv1: The Simple Network Management Protocol, defined in RFC 1157. Security is based on community strings. • SNMPv2c: Community-string based Administrative Framework for SNMPv2, defined in RFC 1901, RFC 1905, and RFC 1906. SNMPv2c uses the community-based security model of SNMPv1. • SNMPv3: Version 3 is an interoperable standards-based protocol defined in RFCs 2273 to 2275. SNMPv3 provides secure access to devices by authenticating and encrypting packets. <p>The security features provided in SNMPv3 are as follows:</p> <ul style="list-style-type: none"> — Message integrity: Ensures packets are not tampered with in transit. — Authentication: Determines the message is received from a valid source. — Encryption: Scrambling packet contents to prevent an unauthorized source from learning it. <p>Both SNMPv1 and SNMPv2c use a community-based form of security. The community of managers able to access the agent MIB is controlled by a password.</p> <p>SNMPv2c support includes a bulk retrieval mechanism and more detailed error message reporting. The bulk retrieval mechanism supports the retrieval of tables and large quantities of information, minimizing the number of round-trips required. SNMPv2c error handling includes expanded error codes that distinguish different kinds of error conditions; these conditions are reported through a single error code in SNMPv1. SNMPv2c error return codes report error type.</p> <p>SNMPv3 is a security model which defines an authentication strategy that is configured for a user and the group in which the user resides. A security level is the permitted level of security within the model. A combination of a security model and a security level determines the security mechanism employed to handle an SNMP packet.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 349.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 1891; Arista User Manual v. 4.12.3 (7/17/13), at 1654; Arista User Manual, v. 4.11.1 (1/11/13), at 1341; Arista User Manual v. 4.10.3 (10/22/12), at 1107-08; Arista User Manual v. 4.9.3.2 (5/3/12), at 863; Arista User Manual v. 4.7.3 (7/18/11), at 531.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>SNMPv3 uses contexts to distinguish between these multiple instances. An SNMP context is a collection of management information that you can access through the SNMP agent. A device can support multiple contexts for different logical network entities. An SNMP context allows the SNMP manager to access one of the multiple instances of a MIB module supported on the device for the different logical network entities.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 11-3.</p>	<p>An SNMP context is a collection of management information items accessible by an SNMP entity. Each item of may exist in multiple contexts. Each SNMP entity can access multiple contexts. A context is identified by the EngineID of the hosting device and a context name.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 1994.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 1684; Arista User Manual, v. 4.11.1 (1/11/13), at 1369; Arista User Manual v. 4.10.3 (10/22/12), at 1136; Arista User Manual v. 4.9.3.2 (5/3/12), at 892; Arista User Manual v. 4.8.2 (11/18/11), at 699; Arista User Manual v. 4.7.3 (7/18/11), at 555.</p>

<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Step 2 <code>vlan vlan</code></p> <p>Example: <code>switch(config)# vlan 901</code> <code>switch(config-vlan)#</code></p> <p>Enters VLAN configuration mode for the VLAN specified.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 16-18.</p>	<p>Example</p> <ul style="list-style-type: none"> This command creates VLAN 49 and enters VLAN configuration mode for the new VLAN: <code>switch(config)#vlan 49</code> <code>switch(config-vlan-49)#</code> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 803.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 650; Arista User Manual, v. 4.11.1 (1/11/13), at 502; Arista User Manual v. 4.10.3 (10/22/12), at 420; Arista User Manual v. 4.9.3.2 (5/3/12), at 359.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>To permit the discovery of non-Cisco devices, the switch also supports the <i>Link Layer Discovery Protocol (LLDP)</i>, a vendor-neutral device discovery protocol that is defined in the IEEE 802.1ab standard. LLDP allows network devices to advertise information about themselves to other devices on the network. This protocol runs over the data-link layer, which allows two systems running different network layer protocols to learn about each other.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-2.</p>	<p>Link Layer Discovery Protocol (LLDP) allows Ethernet network devices to advertise details about themselves, such as device configuration, capabilities and identification, to directly connected devices on the network that are also using LLDP.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 572.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 447; Arista User Manual, v. 4.11.1 (1/11/13), at 365.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Guidelines and Limitations</p> <p>LLDP has the following configuration guidelines and limitations:</p> <ul style="list-style-type: none"> • LLDP must be enabled on the device before you can enable or disable it on any interfaces. • LLDP is supported only on physical interfaces. • LLDP can discover up to one device per port. • LLDP can discover Linux servers, provided they are not using a converged network adapter (CNA). LLDP cannot discover other types of servers. • DCBXP incompatibility messages might appear when you change the network QoS policy, if a physical loopback connection is in the device. The incompatibility exists for only a short time and then clears. • DCBXP is not supported for the Cisco Nexus 2000 Series Fabric Extender. • Beginning with Cisco NX-OS Release 5.2, LLDP is supported for the Cisco Nexus 2000 Series Fabric Extender. LLDP packets can now be sent and received through the Fabric Extender ports for neighbor discovery. <ul style="list-style-type: none"> – All LLDP configuration on Fabric Extender ports occurs on the supervisor. LLDP configuration and show commands are not visible on the Fabric Extender console. – LLDP is not supported for a Fabric Extender-virtual port channel (vPC) connection. <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-2.</p>	<p>12.2.4 Guidelines and Limitations</p> <p>LLDP has the following configuration guidelines and limitations:</p> <ul style="list-style-type: none"> • LLDP must be enabled on the device before you can enable or disable it on any interface. • LLDP is supported only on physical interfaces. • LLDP can discover up to one device per port. <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 576.</p> <p><i>See also</i> Arista User Manual v. 4.12.3 (7/17/13), at 448; Arista User Manual, v. 4.11.1 (1/11/13), at 366.</p>

Enabling or Disabling LLDP on an Interface

After you globally enable LLDP, it is enabled on all supported interfaces by default. However, you can enable or disable LLDP on individual interfaces or selectively configure an interface to only send or only receive LLDP packets.

**Note**

If the interface is configured as a tunnel port, LLDP is disabled automatically.

BEFORE YOU BEGIN

Make sure that you are in the correct VDC. To switch VDCs, use the `switchto vdc` command.
Make sure that you have globally enabled LLDP on the device.

SUMMARY STEPS

1. `config t`
2. `interface ethernet slot/port`
3. `[no] lldp transmit`
4. `[no] lldp receive`
5. (Optional) `show lldp interface ethernet slot/port`
6. (Optional) `copy running-config startup-config`

DETAILED STEPS

	Command	Purpose
Step 1	<code>config t</code> Example: <code>switch# config t</code> Enter configuration commands, one per line. End with CNTL/Z. <code>switch(config)#</code>	Enters global configuration mode.
Step 2	<code>interface ethernet slot/port</code> Example: <code>switch(config)# interface ethernet 7/1</code> <code>switch(config-if)</code>	Specifies the interface on which you are enabling LLDP and enters the interface configuration mode.
Step 3	<code>[no] lldp transmit</code> Example: <code>switch(config-if)# lldp transmit</code>	Enables or disables the transmission of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.
Step 4	<code>[no] lldp receive</code> Example: <code>switch(config-if)# lldp receive</code>	Enables or disables the reception of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.

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Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-6.

12.3.2 Enabling LLDP on an Interface

After you globally enable LLDP, it is enabled on all supported interfaces by default. However, by using the `lldp transmit` and `lldp receive` commands, you can enable or disable LLDP on individual interfaces or selectively configure an interface to only send or only receive LLDP packets.

Examples

- These commands enable Ethernet port 3/1 to transmit LLDP packets.

```
switch(config)# interface ethernet 3/1
switch(config-if-Et3/1)# lldp transmit
switch(config-if-Et3/1)#
```

- These commands enable Ethernet port 3/1 to receive LLDP packets.

```
switch(config)# interface ethernet 3/1
switch(config-if-Et3/1)# lldp receive
switch(config-if-Et3/1)#
```

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 577.

See also Arista User Manual v. 4.12.3 (7/17/13), at 449; Arista User Manual, v. 4.11.1 (1/11/13), at 367.

<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div>Step 3</div> <div><div><div>[no] lldp transmit</div><div>Example: switch(config-if)# lldp transmit</div></div><div>Enables or disables the transmission of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.</div></div> <div>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-6.</div>	<div>lldp transmit</div> <div>The lldp transmit command enables the transmission of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.</div> <div><table><tr><td>Platform</td><td>all</td></tr><tr><td>Command Mode</td><td>Interface-Ethernet configuration Interface-Management configuration</td></tr></table></div> <div>Command Syntax</div> <div><div>lldp transmit</div><div>no lldp transmit</div><div>default lldp transmit</div></div> <div>Examples</div> <div><ul style="list-style-type: none">These commands enable the transmission of LLDP packets on a specific interface.<div><div>switch(config)#interface ethernet 4/1</div><div>switch(config-if-Et4/1)#lldp transmit</div><div>switch(config-if-Et4/1)#</div></div>These commands disable the transmission of LLDP packets on a specific interface.<div><div>switch(config)#interface ethernet 4/1</div><div>switch(config-if-Et4/1)#no lldp transmit</div><div>switch(config-if-Et4/1)#</div></div></div> <div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 593.</div> <div>See also Arista User Manual v. 4.12.3 (7/17/13), at 466; Arista User Manual, v. 4.11.1 (1/11/13), at 384.</div>	Platform	all	Command Mode	Interface-Ethernet configuration Interface-Management configuration
	Platform	all				
Command Mode	Interface-Ethernet configuration Interface-Management configuration					

<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Step 4 [no] lldp receive</p> <p>Example: Switch(config-if)# lldp receive</p> <p>Enables or disables the reception of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-6.</p>	<p>lldp receive</p> <p>The lldp receive command enables the reception of LLDP packets on an interface. After you globally enable LLDP, it is enabled on all supported interfaces by default. The no form of the is command disables the reception of LLDP packets on an interface.</p> <p>Platform all Command Mode Interface-Ethernet configuration Interface-Management configuration</p> <p>Command Syntax</p> <pre>lldp receive no lldp receive default lldp receive</pre> <p>Examples</p> <ul style="list-style-type: none"> These commands enables the reception of LLDP packets on a specific interface. <pre>switch(config)#interface ethernet 4/1 switch(config-if-Et4/1)#lldp receive switch(config-if-Et4/1)#</pre> <ul style="list-style-type: none"> These commands disables LLDP the reception of LLDP packets on a specific interface. <pre>switch(config)#interface ethernet 4/1 switch(config-if-Et4/1)# no lldp receive switch(config-if-Et4/1)#</pre> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 588.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 461; Arista User Manual, v. 4.11.1 (1/11/13), at 379.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Configuring Optional LLDP Parameters</p> <p>You can configure the frequency of LLDP updates, the amount of time for a receiving device to hold the information before discarding it, and the initialization delay time. You can also select the TLVs to include in LLDP packets.</p> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-7.</p>	<p>12.3.3 Optional LLDP Parameters</p> <p>You can globally configure the frequency of LLDP updates, the amount of time for a receiving device to hold the information before discarding it, and the initialization delay time. You can also select the TLVs to include in LLDP packets.</p> <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 577.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 449; Arista User Manual, v. 4.11.1 (1/11/13), at 367.</p>

<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<div data-bbox="302 172 705 253"> <p>Step 2 [no] lldp holdtime <i>seconds</i></p> <p>Example: switch(config)# lldp holdtime 200</p> </div> <div data-bbox="747 172 1125 293"> <p>(Optional) Specifies the amount of time in seconds that a receiving device should hold the information sent by your device before discarding it.</p> <p>The range is 10 to 255 seconds; the default is 120 seconds.</p> </div> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-8.</p>	<p>12.3.3.2 Setting the LLDP Hold Time</p> <p>The lldp holdtime command specifies the amount of time in seconds that a receiving device should hold the information sent by the device before discarding it.</p> <p>Examples</p> <ul style="list-style-type: none"> This command specifies that the receiving device should retain the information for 180 seconds before discarding it. switch(config)# lldp holdtime 180 switch(config)# This command reverts the LLDP hold time and to the default value of 120 seconds. switch(config)# no lldp holdtime 180 switch(config)# <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 578.</p> <p>See also Arista User Manual v. 4.12.3 (7/17/13), at 450; Arista User Manual, v. 4.11.1 (1/11/13), at 368.</p>
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<div data-bbox="302 659 705 740"> <p>[no] lldp reinit <i>seconds</i></p> <p>Example: switch(config)# lldp reinit 5</p> </div> <div data-bbox="705 659 1125 764"> <p>(Optional) Specifies the delay time in seconds for LLDP to initialize on any interface.</p> <p>The range is 1 to 10 seconds; the default is 2 seconds.</p> </div> <p>Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-8.</p>	<p>lldp reinit</p> <p>The lldp reinit command specifies the delay time in seconds for LLDP to initialize on any interface.</p> <p>Platform all Command Mode Global Configuration</p> <p>Command Syntax</p> <p>lldp reinit <i>delay</i> no lldp reinit default lldp reinit</p> <p>Parameters</p> <ul style="list-style-type: none"> <i>delay</i> the amount of time the device should wait before re-initialization is attempted. Value ranges from 1 to 20 seconds; default value is 2 seconds. <p>Examples</p> <ul style="list-style-type: none"> This command specifies that the switch should wait 10 seconds before attempting to re-initialize. switch(config)# lldp reinit 10 switch(config)# This command removes the re-initialize timer. switch(config)# no lldp reinit 10 switch(config)# <p>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 589.</p> <p>See also Arista User Manual v. 4.13.6F (4/14/2014), at 318; Arista User Manual v. 4.12.3 (7/17/13), at 262; Arista User Manual, v. 4.11.1 (1/11/13), at 208.</p>

Step 6	<code>[no] lldp tlv-select tlv</code>	(Optional) Specifies the TLVs to send and receive in LLDP packets. The available TLVs are dcbxp, management-address, port-description, port-vlan, system-capabilities, system-description, and system-name. All available TLVs are enabled by default.
	Example: <code>switch(config)# lldp tlv-select system-name</code>	Note For more information about using these TLVs, see the <i>Cisco Nexus 7000 Series NX-OS System Management Command Reference</i> .

Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-8.

Cisco NX-OS 6.2

Effective date of registration:
11/13/2014

lldp tlv-select

The `lldp tlv-select` command allows the user to specify the TLVs to send and receive in LLDP packets. The available TLVs are management-address, port-description, port-vlan, system-capabilities, system-description, and system-name.

Platform all
Command Mode Global Configuration

Command Syntax

```
lldp tlv-select TLV_NAME
no lldp tlv-select TLV_NAME
default lldp tlv-select TLV_NAME
```

Parameters

- TLV_NAME** the TLV specifies the information to be sent or received in the LLDP packet: Options include:
 - `link-aggregation` specifies the link aggregation TLV.
 - `management-address` specifies the management address TLV.
 - `max-frame-size` specifies the Frame size TLV.
 - `port-description` specifies the port description TLV.
 - `port-vlan` specifies the port VLAN ID TLV.
 - `system-capabilities` specifies the system capabilities TLV.
 - `system-description` specifies the system description TLV.
 - `system-name` specifies the system name TLV.

Example

- This command enables the system description TLV:
`switch(config)# lldp tlv-select system-description`
`switch(config)#`
- This command disables the system description TLV:
`switch(config)# no lldp tlv-select system-description`
`switch(config)#`
- This command enables the max-frame-size TLV:
`switch(config)# lldp tlv-select max-frame-size`
`switch(config)#`
- This command disables the max-frame-size TLV:
`switch(config)# no lldp tlv-select max-frame-size`
`switch(config)#`

Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 592.




See also Arista User Manual v. 4.12.3 (7/17/13), at 465; Arista User Manual, v. 4.11.1 (1/11/13), at 383.

Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>show lldp traffic</div> <div>Displays the LLDP counters, including the number of LLDP packets sent and received by the device, the number of discarded packets, and the number of unrecognized TLVs.</div>	12.3.5.4 Viewing LLDP Traffic The show lldp traffic command displays the LLDP counters, including the number of packets sent and received, and the number of packets discarded by the switch.
	Cisco Nexus 7000 Series NX-OS System Management Configuration Guide, Release 6.x (2013), at 18-9.	Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 581. See also Arista User Manual v. 4.12.3 (7/17/13), at 454; Arista User Manual, v. 4.11.1 (1/11/13), at 372.





Exhibit Copying-2





Filed Under Seal





Exhibit Copying-2 – Evidence of Command Copying

	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears¹		Identical (I) or Similar (S)
1.	aaa accounting	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	aaa accounting	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 206		I
2.	aaa accounting dot1x	IOS XE 3.5; NX-OS 4.0 through 6.2	aaa accounting dot1x	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 207		I






¹ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
3.	aaa authentication login	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	aaa authentication login	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 210		I
4.	aaa authorization config-commands	Cisco IOS 11.2 through 15.4; IOS XE 3.5	aaa authorization config-commands	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 214		I
5.	aaa authorization console	Cisco IOS 12.0 through 15.4; IOS XE 3.5	aaa authorization console	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 215		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
6.	aaa group server radius	Cisco IOS 12.0 through 15.4; IOS XR 3.2 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	aaa group server radius	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 218		I
7.	aaa group server tacacs+	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	aaa group server tacacs+	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 219		I
8.	address-family	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	address-family	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 33, 1617, 1737		I





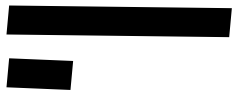
	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
9.	aggregate-address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	aggregate-address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 31, 1428, 1402, 1618		I
10.	area default-cost	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	area default-cost (OSPFv3) ²	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1553		I
11.	area default-cost	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	area default-cost (OSPFv2)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1470		I






² The use of the qualifiers “OSPFv3” or “OSPFv2” in certain instances indicates the routing mode and does not change my opinions with respect to whether a command is identical or similar. I understand that these qualifiers are not part of the Arista command syntax, and thus do not impact my opinions that certain Cisco multi-word command expressions are identical to certain Arista multi-word command expressions. Unless otherwise noted, this analysis applies throughout my report.





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
12.	area nssa	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	area nssa (OSPFv2)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1472		I
13.	area nssa	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	area nssa (OSPFv3)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1554		I
14.	area nssa default- information- originate	Cisco IOS 11.0 through 15.4; NX-OS 4.0 through 6.2	area nssa default- information- originate (OSPFv2)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1473		I
15.	area nssa default- information- originate	Cisco IOS 11.0 through 15.4; NX-OS 4.0 through 6.2	area nssa default- information- originate (OSPFv3)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F 4.15.3F, User Manual, p. 30, 1555		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
16.	area nssa no-summary	Cisco IOS 11.0 through 15.4; NX-OS 4.0 through 6.2	area nssa no-summary (OSPFv2)	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1475		I
17.	area nssa translate type7 always	Cisco IOS 15.1 through 15.4; NX-OS 4.0 through 6.2	area nssa translate type7 always (OSPFv2)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1476		I
18.	area nssa translate type7 always	Cisco IOS 15.1 through 15.4; NX-OS 4.0 through 6.2	area nssa translate type7 always (OSPFv3)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1556		I
19.	area range	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	area range (OSPFv3)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1557		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
20.	area range	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	area range (OSPFv2)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1477		I
21.	area stub	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	area stub (OSPFv2)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1478		I
22.	area stub	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	area stub (OSPFv3)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1558		I
23.	arp timeout	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	arp timeout	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 26, 1315		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
24.	banner login	Cisco IOS 11.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	banner login	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 280		I
25.	banner motd	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	banner motd	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 281		I
26.	bfd all-interfaces	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	bfd all-interfaces	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1796		I
27.	bgp client-to-client reflection	Cisco IOS 11.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	bgp client-to-client reflection	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1621		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
28.	bgp cluster-id	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5	bgp cluster-id	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1622		I
29.	bgp confederation identifier	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5	bgp confederation identifier	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1623		I
30.	bgp confederation peers	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5; NX-OS 4.0 through 6.2	bgp confederation peers	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1624		I
31.	bgp listen limit	Cisco IOS 12.2 through 15.4; ; IOS XE 3.5	bgp listen limit	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1628		I





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32.	bgp log-neighbor-changes	Cisco IOS 11.1 through 15.4; IOS XR 3.0 through 3.5; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	bgp log-neighbor-changes	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1630		I
33.	bgp redistribute-internal	Cisco IOS 12.1 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5	bgp redistribute-internal (BGP)	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1631		I
34.	boot system	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	boot system	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 376		I





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35.	channel-group	Cisco IOS 11.3 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	channel-group	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 491		I
36.	class-map type control-plane	NX-OS 4.0 through 6.2	class-map type control-plane	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 26, 1235		I
37.	clear arp-cache	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	clear arp-cache	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 26, 1316		I





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38.	clear counters	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	clear counters	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 670		I
39.	clear ip arp	NX-OS 4.0 through 6.2	clear ip arp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1317		I
40.	clear ip bgp	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	clear ip bgp	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1632		I






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41.	clear ip igmp group	Cisco IOS 11.0 through 15.4; IOS XE 3.5	clear ip igmp group	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1847		I
42.	clear ip mroute	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	clear ip mroute	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1814		I
43.	clear ip msdp sa-cache	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	clear ip msdp sa-cache	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1976		I
44.	clear ip nat translation	Cisco IOS 11.2 through 15.4; IOS XE 3.5	clear ip nat translation	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1320		I








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45.	clear ip ospf neighbor	Cisco IOS 11.1 through 15.4; NX-OS 4.0 through 6.2	clear ip ospf neighbor	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1480		I
46.	clear ipv6 neighbors	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	clear ipv6 neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1397		I
47.	clear ipv6 ospf force-spf	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	clear ipv6 ospf force-spf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1559		I
48.	clear lldp counters	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5	clear lldp counters	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 625		I

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49.	clear lldp table	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5	clear lldp table	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 626		I
50.	clear mac-address-table dynamic	Cisco IOS 12.2 through 15.0; NX-OS 4.0 through 6.2	clear mac address-table dynamic	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 672		I
51.	clear spanning-tree counters	NX-OS 4.0 through 6.2	clear spanning-tree counters	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1002		I






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52.	clock set	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	clock set	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 283		I
53.	clock timezone	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	clock timezone	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 284		I
54.	control-plane	Cisco IOS 12.2 through 15.4; IOS XR 3.5 through 5.2; IOS XE 2.1 through 3.5; NX-OS 6.2	control-plane	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 674		I





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55.	default-information originate (OSPF)	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	default-information originate (OSPFv2)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1482		I
56.	default-information originate (OSPFv3)	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	default-information originate (OSPFv3)	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1560		I
57.						
58.	default-metric (OSPFv3)	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	default-metric (OSPFv3)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1561		I





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59.	distance bgp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	distance bgp	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1638		
60.	domain-id	Cisco IOS 12.1 through 15.4; IOS XR 3.3 through 5.2; IOS XE 3.5	domain-id	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 558		I
61.	dot1x max-reauth-req	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x max-reauth-req	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 589		I
62.	dot1x pae authenticator	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2	dot1x pae authenticator	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 590		I





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63.	dot1x port-control	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x port-control	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 591		I
64.	dot1x reauthentication	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x reauthentication	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 592		I
65.	dot1x system-auth-control	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x system-auth-control	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 588		I
66.	dot1x timeout quiet-period	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x timeout quiet-period	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 593		I
67.	dot1x timeout reauth-period	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x timeout reauth-period	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 594		I
68.	dot1x timeout tx-period	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x timeout tx-period	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 595		I







	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
69.	enable secret	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	enable secret	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 225		I
70.	erase startup-config	Cisco IOS 11.0 through 15.4; IOS XE 2.1;	erase startup-config	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.15.3F, User Manual, p. 15, 377		I
71.	errdisable detect cause link- flap	Cisco IOS 12.2 through 15.4	errdisable detect cause link- flap	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 677		I






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72.	errdisable recovery cause	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	errdisable recovery cause	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 679		I
73.	errdisable recovery interval	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	errdisable recovery interval	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 680		I
74.	flowcontrol receive	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	flowcontrol receive	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 452		I
75.	flowcontrol send	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	flowcontrol send	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 453		I






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76.	interface ethernet	IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	interface ethernet	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 456		I
77.	interface loopback	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	interface loopback	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 681		I
78.	interface port-channel	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	interface port-channel	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 498		I






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79.	interface vlan	Cisco IOS 11.3 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	interface vlan	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 803		I
80.	ip access-group	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip access-group	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 899		I
81.	ip access-list	Cisco IOS 11.2 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip access-list	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 900		I





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82.	ip access-list standard	Cisco IOS 11.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	ip access-list standard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 901		I
83.	ip address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip address	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1322		I
84.	ip as-path access-list	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip as-path access-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1641		I





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85.	ip community-list expanded	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip community-list expanded	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1643		I
86.	ip community-list standard	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip community-list standard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1644		I
87.	ip dhcp smart-relay	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.2 through 6.2	ip dhcp smart-relay	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1326-27		I
88.	ip dhcp smart-relay global	IOS XE 3.5; NX-OS 5.2 through 6.2	ip dhcp smart-relay global	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1328		I
89.	ip dhcp snooping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip dhcp snooping	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 1329		I





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90.	ip dhcp snooping information option	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip dhcp snooping information option	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1330		I
91.	ip dhcp snooping vlan	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip dhcp snooping vlan	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1331		I
92.	ip domain lookup	Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip domain lookup	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 295		I
93.	ip domain name	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip domain-name	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 296		I





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94.	ip extcommunity-list expanded	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2	ip extcommunity-list expanded	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1645		I
95.	ip extcommunity-list standard	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2	ip extcommunity-list standard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1646		I
96.	ip helper-address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ip helper-address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1333		I
97.	ip host	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip host	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 297		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
98.	ip http client source-interface	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ip http client source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 12, 142		I
99.	ip icmp redirect	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ip icmp redirect	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1334		I
100.	ip igmp last-member-query-count	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp last-member-query-count	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1853		I
101.	ip igmp last-member-query-interval	Cisco IOS 12.1 through 15.4; IOS XE 3.5	ip igmp last-member-query-interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1854		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
102.	ip igmp query-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp query-interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1857		I
103.	ip igmp query-max-response-time	Cisco IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp query-max-response-time	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1858		I
104.	ip igmp snooping	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp snooping	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1860		I






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105.	ip igmp snooping querier	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp snooping querier	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1862		I
106.	ip igmp snooping vlan	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1875		I
107.	ip igmp snooping vlan immediate-leave	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan immediate-leave	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1876		I






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108.	ip igmp snooping vlan mrouter	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan mrouter	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1878		I
109.	ip igmp snooping vlan static	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan static	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1891		I
110.	ip igmp startup-query- interval	NX-OS 4.0 through 6.2	ip igmp startup-query- interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1893		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
111.	ip igmp startup-query-count	NX-OS 4.0 through 6.2	ip igmp startup-query-count	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1892		I
112.	ip igmp static-group	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip igmp static-group	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1894		I
113.	ip igmp version	Cisco IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp version	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1898		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
114.	ip load-sharing	Cisco IOS 11.2 through 15.4; IOS XE 2.1 through 3.5	ip load-sharing	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1335		I
115.	ip local-proxy-arp	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip local-proxy-arp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1336		I
116.	ip msdp cache-sa-state	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip msdp cache-sa-state	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1977		I
117.	ip msdp default-peer	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip msdp default-peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1978		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
118.	ip msdp description	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp description	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1979		I
119.	ip msdp group-limit	NX-OS 4.0 through 6.2	ip msdp group-limit	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1980		I
120.	ip msdp keepalive	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp keepalive	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1981		I
121.	ip msdp mesh-group	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp mesh-group	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1982		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
122.	ip msdp originator-id	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp originator-id	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1983		I
123.	ip msdp peer	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1984		I
124.	ip msdp sa-filter in	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip msdp sa-filter in	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1986		I
125.	ip msdp sa-filter out	Cisco IOS 12.0 through 15.4; IOS XE 3.5;	ip msdp sa-filter out	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1987		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
126.	ip msdp sa-limit	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp sa-limit	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1988		I
127.	ip msdp shutdown	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp shutdown	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1989		I
128.	ip msdp timer	Cisco IOS 12.1 through 15.4; IOS XE 3.5	ip msdp timer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1990		I
129.	ip multicast boundary	Cisco IOS 11.1 through 15.4; IOS XE 3.5	ip multicast boundary	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1820-21		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
130.	ip multicast-routing	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ip multicast-routing	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1823		I
131.	ip name-server	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip name-server	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 298		I
132.	ip nat pool	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip nat pool	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1338		I
133.	ip nat translation tcp-timeout	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip nat translation tcp-timeout	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1344		I






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134.	ip nat translation udp-timeout	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip nat translation udp- timeout	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1345		I
135.	ip ospf authentication	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf authentication	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1484		I
136.	ip ospf authentication-key	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf authentication-key	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1485		I
137.	ip ospf bfd	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ip ospf bfd	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1797		I



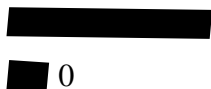

	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
138.	ip ospf cost	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf cost	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1486		I
139.	ip ospf dead-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf dead-interval	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1487		I
140.	ip ospf hello-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf hello-interval	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1488		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
141.	ip ospf message-digest-key	Cisco IOS 11.0 through 15.4; IOS XR 3.0; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf message-digest-key	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1489		I
142.	ip ospf name-lookup	Cisco IOS 11.0 through 15.4; IOS XE 3.5	ip ospf name-lookup	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1490		I
143.	ip ospf network	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf network	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p.		I






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144.	ip ospf priority	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf priority	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1492		I
145.	ip ospf retransmit-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf retransmit-interval	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1493		I
146.	ip ospf shutdown	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf shutdown	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1494		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
147.	ip ospf transmit-delay	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf transmit-delay	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1495		I
148.	ip pim anycast-rp	NX-OS 4.0 through 6.2	ip pim anycast-rp	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1934		I
149.	ip pim bfd	Cisco IOS 15.4; NX-OS 5.0 through 6.2	ip pim bfd	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1798		I
150.	ip pim bfd-instance	NX-OS 5.0 through 6.2	ip pim bfd-instance	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1799		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
151.	ip pim bsr-border	Cisco IOS 11.3 through 15.4; IOS XE 3.5	ip pim bsr-border	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1936		I
152.	ip pim bsr-candidate	Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim bsr-candidate	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1937		I
153.	ip pim dr-priority	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim dr-priority	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1940		I
154.	ip pim log-neighbor-changes	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim log-neighbor-changes	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1942		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
155.	ip pim neighbor-filter	Cisco IOS 11.3 through 15.4; IOS XE 3.5	ip pim neighbor-filter	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1943		I
156.	ip pim query-interval	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5;	ip pim query-interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1944	 0	I
157.	ip pim register-source	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 6.2	ip pim register-source	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1945		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
158.	ip pim rp-address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim rp-address	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p., EOS v. 4.15.3F, User Manual, p. 36, 1946		I
159.	ip pim rp-candidate	Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim rp-candidate	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1947-48		I
160.	ip pim sparse-mode	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim sparse-mode	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1949		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
161.	ip pim spt-threshold	Cisco IOS 11.1 through 15.4; IOS XR 3.0; IOS XE 3.5	ip pim spt-threshold	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1951		I
162.	ip pim spt-threshold group-list	Cisco IOS 11.1 through 15.4	ip pim spt-threshold group-list	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1952		I
163.	ip pim ssm range	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim ssm range	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1953		I
164.	ip prefix-list	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip prefix-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 902		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
165.	ip protocol	Cisco IOS 12.0 through 15.4	ip protocol (Monitor Reachability Probe Transmitter)	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 39, 2133		I
166.	ip proxy-arp	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip proxy-arp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1346		I
167.	ip radius source-interface	Cisco IOS 11.3 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ip radius source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 226		I
168.	ip rip v2-broadcast	Cisco IOS 12.1 through 15.4; IOS XE 3.5	ip rip v2-broadcast	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1720		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
169.	ip route	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip route	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1347-48		I
170.	ip routing	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip routing	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1349		I
171.	ip tacacs source-interface	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ip tacacs source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 227		I






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172.	ipv6 access-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ipv6 access-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 904		I
173.	ipv6 address	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1398		I
174.	ipv6 dhcp relay destination	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ipv6 dhcp relay destination	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1400		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
175.	ipv6 enable	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ipv6 enable	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1401		I
176.	ipv6 host	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ipv6 host	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 299		I
177.	ipv6 access-group	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ipv6 access-group	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 903		I
178.	ipv6 nd managed-config-flag	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd managed-config-flag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1406		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
179.	ipv6 nd ns-interval	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd ns-interval	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1407		I
180.	ipv6 nd other-config-flag	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd other-config-flag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1408		I
181.	ipv6 nd prefix	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.2 through 6.2	ipv6 nd prefix	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1409		I







	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
182.	ipv6 nd ra interval	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd ra interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1415		I
183.	ipv6 nd ra lifetime	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd ra lifetime	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1416		I
184.	ipv6 nd ra suppress	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ipv6 nd ra suppress	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1418		I






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185.	ipv6 nd reachable-time	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd reachable-time	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1419		I
186.	ipv6 nd router-preference	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ipv6 nd router-preference	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1420		I
187.	ipv6 neighbor	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 neighbor	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1421		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
188.	ipv6 ospf area	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf area	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1563		I
189.	ipv6 ospf cost	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf cost	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1564	 0.0	I
190.	ipv6 ospf dead-interval	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf dead-interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1565	 0.0	I
191.	ipv6 ospf hello-interval	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf hello-interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1566		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
192.	ipv6 ospf network	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf network	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1567		I
193.	ipv6 ospf priority	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf priority	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1568		I
194.	ipv6 ospf retransmit-interval	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf retransmit-interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1569		I
195.	ipv6 ospf transmit-delay	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf transmit-delay	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1570		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
196.	ipv6 prefix-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 prefix-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 906		I
197.	ipv6 route	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 route	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1423		I
198.	ipv6 router ospf	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 router ospf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1571		I
199.	ipv6 unicast-routing	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	ipv6 unicast-routing	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1425		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
200.	isis hello-interval	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	isis hello-interval	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1739		I
201.	isis hello-multiplier	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	isis hello-multiplier	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1740		I
202.	isis lsp-interval	Cisco IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	isis lsp-interval	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1741		I
203.	isis metric	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	isis metric	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1742		I
204.	isis passive	NX-OS 4.0 through 6.2	isis passive	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1744		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
205.	isis passive interface	NX-OS 6.2	passive-interface (IS-IS)	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1749		S
206.	isis priority	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	isis priority	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1745		I
207.	is-type	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	is-type	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1746		I
208.	lacp port-priority	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	lacp port-priority	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 499		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
209.	lacp rate	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 5.2 through 6.2	lacp rate	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 500		I
210.	lacp system-priority	Cisco IOS 12.1 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	lacp system-priority	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 501		I
211.	link state group	Cisco IOS 15.1 through 15.4; IOS XE 3.5	link state group	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 683		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
212.	link state track	Cisco IOS 15.1 through 15.4; IOS XE 3.5	link state track	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 684		I
213.	lldp holdtime	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2	lldp holdtime	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 627		I
214.	lldp receive	Cisco IOS 12.2 through 15.4; NX-OS 5.0 through 6.2	lldp receive	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 630		I
215.	lldp reinit	Cisco IOS 12.2 through 15.4; IOS XR 5.2; NX-OS 5.0 through 6.2	lldp reinit	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 631		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
216.	lldp run	Cisco IOS 12.2 through 15.4	lldp run	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 632		I
217.	lldp timer	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2	lldp timer	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 633		I
218.	lldp tlv-select	Cisco IOS 12.2 through 15.4; IOS XR 5.2; NX-OS 5.0 through 6.2	lldp tlv-select	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 634		I
219.	lldp transmit	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2	lldp transmit	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 635		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
220.	load interval	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.2 through 6.2	load interval	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 686		I
221.	log-adjacency-changes	Cisco IOS 12.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 5.2	log-adjacency-changes (OSPFv2)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1496		I
222.	log-adjacency-changes (IS- IS)	IOS XR 3.0 through 5.2; NX-OS 4.0 through 6.2	log-adjacency-changes (IS- IS)	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1747		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
223.	log-adjacency-changes (OSPFv3)	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	log-adjacency-changes (OSPFv3)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1572		I
224.	logging host	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	logging host	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 12, 147		I
225.	mac access-group	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	mac access-group	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 907		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
226.	mac access-list	NX-OS 4.0 through 6.2	mac access-list	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 908		I
227.	mac address-table aging-time	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	mac address-table aging-time	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 687		I
228.	mac address-table static	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	mac address-table static	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 688		I





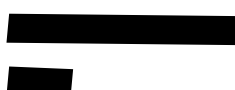
	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
229.	mac-address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 6.2	mac-address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 459		I
230.	maximum-paths	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	maximum-paths (OSPF)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p.		I
231.	maximum-paths (OSPFv3)	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	maximum-paths (OSPFv3)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1574		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
232.	neighbor activate	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5	neighbor activate	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1648		I
233.	neighbor allowas-in	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	neighbor allowas-in	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1649		I
234.	neighbor default-originate	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor default-originate	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1650		I
235.	neighbor description	Cisco IOS 11.3 through 15.4; IOS XE 3.5	neighbor description	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1651		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
236.	neighbor ebgp-multihop	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0	neighbor ebgp-multihop	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1652		I
237.	neighbor fall-over bfd	Cisco IOS 12.2 through 15.4; IOS XE 3.5	neighbor fall-over bfd	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1800		I
238.	neighbor local-as	Cisco IOS 12.0 through 15.4; IOS XE 3.5	neighbor local-as	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1656		I
239.	neighbor next-hop-self	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	neighbor next-hop-self	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1660		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
240.	neighbor password	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	neighbor password	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1662		I
241.	neighbor peer-group (assigning members)	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor peer-group (neighbor assignment)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1665		I
242.	neighbor peer-group (creating)	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor peer-group (create)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1663-34		I






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243.	neighbor remote-as	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	neighbor remote-as	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1666		I
244.	neighbor remove-private-as	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor remove-private-as	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1667		I
245.	neighbor route-map	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	neighbor route-map (BGP)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1668		I






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246.	neighbor route-reflector- client	Cisco IOS 11.1 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	neighbor route-reflector- client	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1669		I
247.	neighbor send-community	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0	neighbor send-community	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1670		I
248.	neighbor shutdown	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	neighbor shutdown	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1671		I
249.	neighbor soft-reconfiguration	Cisco IOS 11.2 through 15.4; IOS XE 3.5	neighbor soft-reconfiguration	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1672		I






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250.	neighbor timers	Cisco IOS 12.0 through 15.4; IOS XE 3.5	neighbor timers	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1673		I
251.	neighbor transport connection-mode	Cisco IOS 12.4 through 15.4	neighbor transport connection-mode	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 32, 1674		I
252.	neighbor update-source	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0	neighbor update-source	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 32, 1675		I
253.	neighbor weight	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	neighbor weight	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 32, 1676		I





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254.	network area	Cisco IOS 11.0 through 15.4; IOS XR 3.0; IOS XE 3.5	network area (OSPFv2)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 29, 1500		I
255.	no snmp-server	Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5	no snmp-server	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 37, 2026		I
256.	ntp authenticate	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ntp authenticate	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 300		I
257.	ntp authentication-key	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ntp authentication-key	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 301		I





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258.	ntp server	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ntp server	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 304		I
259.	ntp source	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ntp source	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 306		I
260.	ntp trusted-key	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ntp trusted-key	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 307		I
261.	passive-interface	Cisco IOS 11.0 through 15.4; NX-OS 5.2 through 6.2	passive-interface <interface> (OSPFv2)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 29, 1503		I





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262.	passive-interface (OSPFv3)	Cisco IOS 15.1 through 15.4; IOS XE 3.5	passive-interface (OSPFv3)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 30, 1576		I
263.	passive-interface default	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 6.2	passive-interface default (OSPFv2)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 29, 1502		I
264.	policy-map type control- plane	NX-OS 4.0 through 6.2	policy-map type control- plane	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 26, 1248		I
265.	policy-map type qos	IOS XR 5.2; NX-OS 4.0 through 6.2	policy-map type qos	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 26, 1250		I





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266.	port-channel load-balance	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 5.2 through 6.2	port-channel load-balance	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 17, 508		I
267.	port-channel min-links	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	port-channel min-links	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 17, 517		I
268.	priority1	Cisco IOS 15.0 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.2 through 6.2	ptp priority1	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 321		S Addition of "ptp" is the only difference
269.	priority2	Cisco IOS 15.0 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.2 through 6.2	ptp priority2	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 322		S Addition of "ptp" is the only difference






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270.	priority-flow-control mode	NX-OS 5.2 through 6.2	priority-flow-control mode	EOS v. 4.4.0, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 18, 608		I
271.	private-vlan	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	private-vlan	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 21, 806		I
272.	private-vlan mapping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	private-vlan mapping	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 21, 807		I
273.	ptp domain	NX-OS 5.2 through 6.2	ptp domain	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 314		I





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274.	ptp sync interval	NX-OS 5.2 through 6.2	ptp sync interval	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 14, 324		I
275.	radius-server deadtime	Cisco IOS 11.1 through 15.4; IOS XR 3.3 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	radius-server deadtime	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 13, 230		I
276.	radius-server host	Cisco IOS 11.1 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	radius-server host	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 13, 231		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
277.	radius-server key	Cisco IOS 11.1 through 15.4; IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	radius-server key	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 13, 233		I
278.	radius-server retransmit	Cisco IOS 11.1 through 15.4; IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	radius-server retransmit	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 13, 234		I
279.	radius-server timeout	Cisco IOS 11.1 through 15.4; IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	radius-server timeout	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 13, 235		I


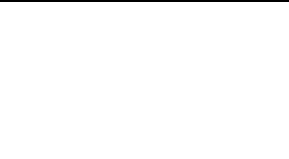

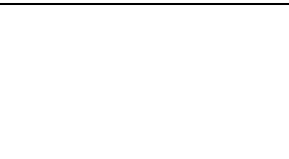

	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
280.	redundancy force-switchover	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	redundancy force-switchover	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 15, 380		I
281.	route-map	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	route-map	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 22, 922		I
282.	router bgp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	router bgp	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 32, 1681		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
283.	router isis	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	router isis	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 33, 1751		I
284.	router ospf	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	router ospf	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 29, 1507		I
285.	router rip	Cisco IOS 11.0 through 15.4; IOS XR 3.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	router rip	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 33, 1723		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
286.	router-id	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	router-id (OSPFv2)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 29, 1506		I
287.	router-id (OSPFv3)	Cisco IOS 15.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	router-id (OSPFv3)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 30, 1578		I
288.	routing-context vrf	Cisco IOS 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	routing-context vrf	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 27, 1354		I
289.	service sequence-numbers	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	service sequence-numbers	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 15, 384		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
290.	set-overload-bit	Cisco IOS 11.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	set-overload-bit	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 33, 1752		I
291.	show aaa method-lists	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show aaa method-lists	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 13, 242		I
292.	show aaa sessions	Cisco IOS 15.2 through 15.4; IOS XE 3.5	show aaa sessions	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 13, 243		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
293.	show arp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show arp	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 27, 1355		I
294.	show bfd neighbors	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	show bfd neighbors	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 34, 1801		I
295.	show clock	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show clock	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 15, 329		I
296.	show dot1q-tunnel	Cisco IOS 12.2 through 15.4; NX-OS 5.0 through 6.2	show dot1q-tunnel	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 21, 808		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
297.	show dot1x	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show dot1x	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 18, 596		I
298.	show dot1x all summary	Cisco IOS 12.1 through 15.4; NX-OS 4.0 through 6.2	show dot1x all summary	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 18, 598		I
299.	show dot1x statistics	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show dot1x statistics	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 18, 597		I
300.	show environment all	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1	show environment all	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 16, 425		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
301.	show environment cooling	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show environment cooling	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.3F, User Manual, p. 16, 426		I
302.	show environment power	IOS XR 3.0 through 5.2; NX-OS 5.0 through 6.2	show environment power	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 427		I
303.	show environment temperature	Cisco IOS 11.2 through 12.1; IOS XR 3.0 through 5.2; IOS XE 2.1	show environment temperature	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 428		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
304.	show etherchannel	Cisco IOS 12.0 through 15.4; IOS XE 3.5	show etherchannel	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 518		I
305.	show hostname	NX-OS 4.0 through 6.2	show hostname	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 336		I
306.	show hosts	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show hosts	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 337		I
307.	show interfaces	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show interfaces	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 706		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
308.	show interfaces capabilities	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show interfaces capabilities	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 462		I
309.	show interfaces description	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces description	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 708		I
310.	show interfaces flowcontrol	IOS 12.2 through 15.4; IOS XE 3.5	show flowcontrol	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 460		S Addition of "interfaces" only difference






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
311.	show interfaces private-vlan mapping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces private-vlan mapping	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 809		I
312.	show interfaces status	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	show interfaces status	EOS v. 4.0.1, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 471		I
313.	show interfaces switchport	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces switchport	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 810		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
314.	show interfaces switchport backup	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show interfaces switchport backup	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 811		I
315.	show interfaces transceiver	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	show interfaces transceiver	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 16, 473		I
316.	show interfaces trunk	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces trunk	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 812		I

	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
317.	show inventory	Cisco IOS 12.4 through 15.4; IOS XR 3.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show inventory	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 11, 75		I
318.	show ip access-lists	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip access-lists	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 930		I
319.	show ip arp	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip arp	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1358		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
320.	show ip bgp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip bgp	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1684		I
321.	show ip bgp community	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip bgp community	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1685		I
322.	show ip bgp neighbors	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp neighbors (route type)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1688		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
323.	show ip bgp neighbors	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip bgp neighbors	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1686		I
324.	show ip bgp paths	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp paths	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1692		I
325.	show ip bgp peer-group	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp peer-group	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1693		I
326.	show ip bgp regexp	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp regexp	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1694		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
327.	show ip bgp summary	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp summary	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1695		I
328.	show ip community-list	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip community-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1696		I
329.	show ip dhcp snooping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip dhcp snooping	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1362		I
330.	show ip extcommunity-list	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 6.2	show ip extcommunity-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1697		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
331.	show ip helper-address	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show ip helper-address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1365		I
332.	show ip igmp groups	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp groups	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1901		I
333.	show ip igmp interface	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp interface	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1904		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
334.	show ip igmp snooping	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp snooping	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1907		I
335.	show ip igmp snooping groups	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp snooping groups	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1910		I
336.	show ip igmp snooping mrouter	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp snooping mrouter	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 35, 1914		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
337.	show ip igmp snooping querier	Cisco IOS 12.4 through 15.4; NX-OS 4.0 through 6.2	show ip igmp snooping querier	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1915		I
338.	show ip interface	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip interface	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1366		I
339.	show ip interface brief	Cisco IOS 12.4 through 15.4; IOS XR 3.4 through 5.2; IOS XE 3.5	show ip interface brief	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1367		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
340.	show ip mfib	Cisco IOS 15.0 through 15.4; IOS XE 2.1 through 3.5	show ip mfib	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1824		I
341.	show ip mroute	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip mroute	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1826		I
342.	show ip mroute count	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip mroute count	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 34, 1827		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
343.	show ip msdp mesh-group	NX-OS 4.0 through 6.2	show ip msdp mesh-group	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1991		I
344.	show ip msdp peer	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip msdp peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1992		I
345.	show ip msdp rpf-peer	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show ip msdp rpf-peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1994		I
346.	show ip msdp sa-cache	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip msdp sa-cache	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1995		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
347.	show ip msdp summary	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip msdp summary	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1997		I
348.	show ip nat translations	Cisco IOS 11.2 through 15.4; IOS XE 3.5	show ip nat translations	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 27, 1370		I
349.	show ip ospf	Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip ospf	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1508		I
350.	show ip ospf border-routers	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf border-routers	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1510		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
351.	show ip ospf database database-summary	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf database database-summary	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1511		I
352.	show ip ospf interface	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf interface	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1516		I
353.	show ip ospf neighbor	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip ospf neighbor	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1519		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
354.	show ip ospf request-list	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf request-list	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1523		I
355.	show ip ospf retransmission- list	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf retransmission- list	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1524		I
356.	show ip pim interface	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip pim interface	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1956		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
357.	show ip pim neighbor	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip pim neighbor	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1957		I
358.	show ip pim rp	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip pim rp	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1960		I
359.	show ip pim rp-hash	Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip pim rp-hash	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 36, 1962		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
360.	show ip prefix-list	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip prefix-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 931		I
361.	show ip rip database	Cisco IOS 12.0 through 15.4; IOS XE 3.5	show ip rip database	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1724		I
362.	show ip rip neighbors	Cisco IOS 15.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip rip neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1725		I
363.	show ip route	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip route	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 1371		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
364.	show ip route summary	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip route summary	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1376		I
365.	show ip route tag	Cisco IOS 15.2 through 15.4	show ip route tag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1377		I
366.	show ipv6 access-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	show ipv6 access-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 932		I
367.	show ipv6 bgp	NX-OS 4.0 through 6.2	show ipv6 bgp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1698		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
368.	show ipv6 bgp community	Cisco IOS 12.2; NX-OS 4.0 through 6.2	show ipv6 bgp community	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1699		I
369.	show ipv6 bgp neighbors	NX-OS 4.0 through 6.2	show ipv6 bgp neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1700		I
370.	show ipv6 bgp summary	NX-OS 4.0 through 6.2	show ipv6 bgp summary	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1706		I
371.	show ipv6 interface	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1430		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
372.	show ipv6 neighbors	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1432		I
373.	show ipv6 ospf	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show ipv6 ospf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1579		I
374.	show ipv6 ospf border- routers	Cisco IOS 12.2; IOS XE 2.1 through 3.5	show ipv6 ospf border- routers	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1580		I
375.	show ipv6 ospf interface	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show ipv6 ospf interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1590		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
376.	show ipv6 ospf neighbor	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show ipv6 ospf neighbor	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 31, 1591		I
377.	show ipv6 prefix-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 prefix-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 933		I
378.	show ipv6 route	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 route	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1433		I
379.	show ipv6 route summary	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 5.2	show ipv6 route summary	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1437		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
380.	show ipv6 route tag	Cisco IOS 15.2 through 15.4	show ipv6 route tag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 29, 1438		I
381.	show isis database	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show isis database	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1753		I
382.	show isis interface	IOS XR 3.0 through 5.2; NX-OS 4.0 through 6.2	show isis interface	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1755		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
383.	show isis topology	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show isis topology	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1760		I
384.	show lacp counters	IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show lacp counters	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 520		I
385.	show lacp interface	NX-OS 4.0 through 6.2	show lacp interface	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 521		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
386.	show lacp neighbor	NX-OS 4.0 through 6.2	show lacp neighbor	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 524		I
387.	show link state group	Cisco IOS 15.1 through 15.4; IOS XE 3.5	show link state group	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 709		I
388.	show lldp	Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5	show lldp	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 636		I
389.	show lldp neighbors	Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2	show lldp neighbors	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 639		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
390.	show lldp traffic	Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2	show lldp traffic	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 18, 641		I
391.	show mac access-list	Cisco IOS 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show mac access-list	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 934		I
392.	show mac address-table	Cisco IOS 11.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show mac address-table	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 710		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
393.	show mac address-table aging time	Cisco IOS 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show mac address-table aging time	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 712		I
394.	show mac address-table count	IOS XE 3.5; NX-OS 4.0 through 6.2	show mac address-table count	EOS v. 4.0.1, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 713		I
395.	show module	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show module	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 12, 167		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
396.	show monitor session	Cisco IOS 12.2 through 15.0; IOS XR 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	show monitor session	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 721		I
397.	show ntp associations	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	show ntp associations	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 340		I
398.	show ntp status	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	show ntp status	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 341		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
399.	show policy-map control-plane	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show policy-map type control-plane	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 26, 1273		I
400.	show policy-map interface	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 6.2	show policy-map interface type qos	EOS v. 4.11.1.2, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 26, 1278		I
401.	show policy-map interface control-plane	NX-OS 5.0 through 6.2	show policy-map interface control-plane	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 26, 1277		I
402.	show port-channel summary	NX-OS 4.0 through 6.2	show port-channel summary	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 532		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
403.	show port-channel traffic	NX-OS 4.0 through 6.2	show port-channel traffic	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 17, 533		I
404.	show port-security	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show port-security	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 722		I
405.	show port-security address	Cisco IOS 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show port-security address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 19, 723		I
406.	show port-security interface	IOS XE 3.5; NX-OS 4.0 through 6.2	show port-security interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 20, 724		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
407.	show privilege	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 6.2	show privilege	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 244		I
408.	show ptp clock	NX-OS 5.2 through 6.2	show ptp clock	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 343		I
409.	show ptp parent	NX-OS 5.2 through 6.2	show ptp parent	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 347		I
410.	show ptp time-property	NX-OS 5.2 through 6.2	show ptp time-property	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 349		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
411.	show radius	IOS XR 3.2 through 5.2; NX-OS 4.0 through 6.2	show radius	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 245		I
412.	show redundancy states	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5	show redundancy states	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 386		I
413.	show reload	Cisco IOS 11.0 through 15.4; IOS XE 2.1	show reload	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 15, 388		I
414.	show role	NX-OS 4.0 through 6.2	show role	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 246		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
415.	show route-map	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show route-map	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 935		I
416.	show snmp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2027		I
417.	show snmp chassis	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show snmp chassis	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2028		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
418.	show snmp community	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp community	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2029		I
419.	show snmp contact	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show snmp contact	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2030		I
420.	show snmp engineID	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp engineID	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2031		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
421.	show snmp group	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp group	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2032		I
422.	show snmp host	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp host	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2033		I
423.	show snmp location	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show snmp location	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2034		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
424.	show snmp mib	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	show snmp mib	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2035		I
425.	show snmp source-interface	NX-OS 5.0 through 6.2	show snmp source-interface	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2036		I
426.	show snmp trap	NX-OS 4.0 through 6.2	show snmp trap	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2037		I
427.	show snmp user	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp user	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2038		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
428.	show snmp view	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	show snmp view	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2039		I
429.	show spanning-tree	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show spanning-tree	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1010		I
430.	show spanning-tree blockedports	NX-OS 6.2	show spanning-tree blockedports	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1013		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
431.	show spanning-tree bridge	NX-OS 4.0 through 6.2	show spanning-tree bridge	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1014		I
432.	show spanning-tree interface	NX-OS 4.0 through 6.2	show spanning-tree interface	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1016		I
433.	show spanning-tree mst	Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	show spanning-tree mst	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1017		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
434.	show spanning-tree mst configuration	Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	show spanning-tree mst configuration	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1019		I
435.	show spanning-tree mst interface	IOS XR 4.3 through 5.2; NX-OS 6.2	show spanning-tree mst interface	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1020		I
436.	show spanning-tree root	NX-OS 4.0 through 6.2	show spanning-tree root	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1022		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
437.	show storm-control	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show storm-control	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 20, 725		I
438.	show tacacs	Cisco IOS 11.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show tacacs	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 247		I
439.	show track	Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show track	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 20, 727		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
440.	show user-account	NX-OS 4.0 through 6.2	show user-account	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 248		I
441.	show users	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show users	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 249		I
442.	show version	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show version	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 12, 172		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
443.	show vlan	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show vlan	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 814		I
444.	show vlan private-vlan	NX-OS 4.0 through 6.2	show vlan private-vlan	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 818		I
445.	show vlan summary	NX-OS 6.2	show vlan summary	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 819		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
446.	show vrf	Cisco IOS 12.2 through 15.4; IOS XR 3.5 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show vrf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1380		I
447.	show vrrp	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show vrrp	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 961		I
448.	snmp trap link-status	Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5	snmp trap link-status	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 38, 2055		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
449.	snmp-server chassis-id	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	snmp-server chassis-id	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2040		I
450.	snmp-server community	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server community	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2041		I
451.	snmp-server contact	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	snmp-server contact	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2042		I

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452.	snmp-server enable traps	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server enable traps	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2043		I
453.	snmp-server engineID local	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	snmp-server engineID local	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2044		I
454.	snmp-server engineID remote	Cisco IOS 12.1 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5	snmp-server engineID remote	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 37, 2045		I





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455.	snmp-server group	Cisco IOS 11.3 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	snmp-server group	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 38, 2047		I
456.	snmp-server host	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server host	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 38, 2048		I
457.	snmp-server location	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server location	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 38, 2050		I





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458.	snmp-server source-interface	Cisco IOS 12.2 through 15.4; IOS XE 2.1; NX-OS 5.0 through 6.2	snmp-server source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 38, 2051		I
459.	snmp-server user	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server user	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 38, 2052		I
460.	snmp-server view	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	snmp-server view	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 38, 2053		I





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461.	spanning-tree bpdupfilter	Cisco IOS 12.2 through 15.4; NX-OS 4.0 through 6.2	spanning-tree bpdupfilter	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1024		I
462.	spanning-tree bpduguard	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree bpduguard	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 1025		I
463.	spanning-tree bridge assurance	NX-OS 4.0 through 6.2	spanning-tree bridge assurance	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1030		I





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464.	spanning-tree cost	Cisco IOS 12.0 through 15.4; NX-OS 4.0 through 6.2	spanning-tree cost	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1031		I
465.	spanning-tree guard	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree guard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1033		I
466.	spanning-tree link-type	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree link-type	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1035		I





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467.	spanning-tree loopguard default	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree loopguard default	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1036		I
468.	spanning-tree mode	Cisco IOS 12.2 through 15.4; NX-OS 4.0 through 6.2	spanning-tree mode	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1039	0	I
469.	spanning-tree mst configuration	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	spanning-tree mst configuration	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1040		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
470.	spanning-tree portfast bpdupfilter default	Cisco IOS 12.2	spanning-tree portfast bpdupfilter default	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1044		I
471.	spanning-tree portfast bpduguard default	Cisco IOS 12.2	spanning-tree portfast bpduguard default	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1045		I
472.	spanning-tree port-priority	Cisco IOS 12.0 through 15.4; NX-OS 4.0 through 6.2	spanning-tree port-priority	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1047		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
473.	spanning-tree transmit hold-count	Cisco IOS 12.2	spanning-tree transmit hold-count	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1050		I
474.	spanning-tree vlan	Cisco IOS 12.0 through 15.4; IOS XE 2.1; NX-OS 4.0 through 6.2	spanning-tree vlan	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1051		I
475.	spf-interval	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	spf-interval	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1762		I





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476.	statistics per-entry	NX-OS 4.0 through 6.2	statistics per-entry (ACL configuration modes)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 22, 936		I
477.	storm-control	Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	storm-control	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 20, 729		I
478.	switchport access vlan	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	switchport access vlan	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 822		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
479.	switchport backup interface	Cisco IOS 12.2 through 15.4	switchport backup interface	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 24, 1052		I
480.	switchport mode	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	switchport mode	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 823		I
481.	switchport port-security	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	switchport port-security	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 20, 733		I






	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
482.	switchport port-security maximum	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	switchport port-security maximum	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 20, 734		I
483.	switchport private-vlan mapping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	switchport private-vlan mapping	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 825		I
484.	switchport trunk allowed vlan	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	switchport trunk allowed vlan	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 826		I






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485.	switchport trunk native vlan	Cisco IOS 12.2 through 15.4; NX-OS 4.0 through 6.2	switchport trunk native vlan	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 828		I
486.	switchport vlan mapping	Cisco IOS 12.2 through 15.4; IOS XE 3.5;	switchport vlan mapping	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 829		I
487.	tacacs-server host	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	tacacs-server host	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 250-51		I





	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
488.	tacacs-server key	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	tacacs-server key	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 252		I
489.	tacacs-server timeout	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	tacacs-server timeout	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 13, 254		I
490.	terminal length	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	terminal length	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 12, 176		I

	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
491.	terminal monitor	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	terminal monitor	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 12, 177		I
492.	timers basic (RIP)	Cisco IOS 11.0 through 15.4; IOS XR 3.3 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	timers basic (RIP)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 33, 1727		I
493.	timers bgp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	timers bgp	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 32, 1708		I

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494.	timers lsa arrival	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	timers lsa arrival (OSPFv2)	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1527		I
495.	timers throttle lsa all	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	timers throttle lsa all (OSPFv2)	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 30, 1528		I
496.	timers throttle spf	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	timers throttle spf (OSPFv2)	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.15.3F, User Manual, p.		I
497.	username sshkey	NX-OS 4.0 through 6.2	username sshkey	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 14, 257		I

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498.	vlan internal allocation policy	Cisco IOS 12.2	vlan internal allocation policy	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 21, 832		I
499.	vrf definition	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	vrf definition	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1381		I
500.	vrf forwarding	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	vrf forwarding	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 28, 1382		I
501.	vrrp authentication	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 6.2	vrrp authentication	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 964		I

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502.	vrrp delay reload	Cisco IOS 15.1 through 15.4; IOS XR 3.4 through 5.2; IOS XE 3.5	vrrp delay reload	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 965		I
503.	vrrp description	Cisco IOS 12.0 through 15.4; IOS XE 3.5	vrrp description	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 966		I
504.	vrrp ip	Cisco IOS 12.0 through 15.4; IOS XR 5.2; IOS XE 3.5	vrrp ip	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 967		I
505.	vrrp ip secondary	IOS 12.0 through 15.4; IOS XE 3.5	vrrp ip secondary	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 968		I

	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹		Identical (I) or Similar (S)
506.	vrrp preempt	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	vrrp preempt	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 972		I
507.	vrrp priority	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	vrrp priority	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 975		I
508.	vrrp shutdown	Cisco IOS 12.4 through 15.4; IOS XE 3.5	vrrp shutdown	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 976		I

	Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Exemplary Infringing Work(s) in Which Command Expression Appears ¹	<div>██████████ ██████████ ██████████████████ ██████████ ██████████</div>	Identical (I) or Similar (S)
509.	vrrp timers advertise	Cisco IOS 12.0 through 15.4; IOS XE 3.5	vrrp timers advertise	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F, EOS v. 4.15.3F, User Manual, p. 23, 977	<div>██████████ ██████</div>	I

Arista User Manuals

Date	Manual	Bates Begin	Bates End
4/8/2009	Arista Networks EOS User Manual Version 4.0.1	CSI-CLI-00007244	CSI-CLI-00007472
3/31/2010	Arista Networks EOS User Manual Version 4.4.0	CSI-CLI-00007473	CSI-CLI-00007840
3/28/2011	Arista Networks EOS User Manual Version 4.6.2	CSI-CLI-00006858	CSI-CLI-00007243
7/19/2012	Arista Networks EOS User Manual Version 4.10.0	CSI-CLI-00007841	CSI-CLI-00008984
1/22/2013	Arista Networks EOS User Manual Version 4.11.1 - Rev. 2	CSI-CLI-00010517	CSI-CLI-00011972
3/1/2013	Arista Networks EOS User Manual Version 4.11.2.1	CSI-CLI-00008985	CSI-CLI-00010516
9/16/2013	Arista Networks EOS User Manual Version 4.12.4	CSI-CLI-00014141	CSI-CLI-00016000

4/14/2014	Arista Networks EOS User Manual Version 4.13.6F	CSI-CLI-00016001	CSI-CLI-00018140
6/17/2014	Arista Networks EOS User Manual Version 4.13.7M	CSI-CLI-00011973	CSI-CLI-00014140
10/2/2014	Arista Networks EOS User Manual Version 4.14.3F - Rev. 2	CSI-CLI-00018146	CSI-CLI-00020337
12/22/2014	Arista Networks EOS User Manual Version 4.14.5F - Rev. 2	CSI-CLI-00000084	CSI-CLI-00002331
1/19/2015	Arista Networks EOS User Manual Version 4.14.6M	CSI-CLI-00004616	CSI-CLI-00006857
4/2015	Arista Networks EOS User Manual Version 4.15.OF - Rev. 2.27	CSI-CLI-00020575	CSI-CLI-00022852
4/18/2015	Arista Networks EOS User Manual Version 4.15.OF	CSI-CLI-00002332	CSI-CLI-00004615
11/20/2015	Arista Networks EOS User Manual Version 4.15.3F	CSI-CLI-06302874	CSI-CLI-06305161

Exhibit Copying-3

Exhibit Copying-3 -- Evidence of Output Copying

Copyright Registration Information	Cisco	Arista
<p>Cisco IOS XE 3.5</p> <p>Effective date of registration: 11/24/2014</p>	<pre>Router# show interfaces atm 0/0/0 ATM0/0/0 is up, line protocol is up Hardware is cyBus ATM Internet address is 10.1.1.1/24 MTU 4470 bytes, sub MTU 4470, BW 156250 Kbit, DLY 80 usec, rely 255/255, load 1/255 Encapsulation ATM, loopback not set, keepalive set (10 sec) Encapsulation(s): AAL5, PVC mode 256 TX buffers, 256 RX buffers, 2048 maximum active VCs, 1024 VCs per VP, 1 current VCCs VC idle disconnect time: 300 seconds Last input never, output 00:00:05, output hang never Last clearing of "show interface" counters never Queueing strategy: fifo Output queue 0/40, 0 drops; input queue 0/75, 0 drops 5 minute input rate 0 bits/sec, 1 packets/sec 5 minute output rate 0 bits/sec, 1 packets/sec 5 packets input, 560 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 5 packets output, 560 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output buffers swapped out</pre> <p>Cisco IOS Asynchronous Transfer Mode Command Reference (2011), at 476</p>	<p>Examples</p> <ul style="list-style-type: none"> These commands display interface counters, clear the counters, then display the counters again. <pre>switch#show interfaces ethernet 1 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff) MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 minutes input rate 001 bps (0.0% with framing), 0 packets/sec 5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec 2285370854005 packets input, 225028582832583 bytes Received 29769609741 broadcasts, 3073437605 multicast 113 runts, 1 giants 118 input errors, 117 CRC, 0 alignment, 18 symbol 27511409 PAUSE input 335031607678 packets output, 27845413138330 bytes Sent 14282316688 broadcasts, 54045824072 multicast 108 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 413. Arista User Manual v. 4.11.2.1 (3/1/2013), at 447. Arista User Manual v. 4.12.4 (9/16/2013), at 533. Arista User Manual v. 4.13.6F (4/14/2014), at 637. Arista User Manual v. 4.13.7M (6/17/2014), at 638. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 646. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 648. Arista User Manual v. 4.14.6M (1/19/2015), at 644. Arista User Manual v. 4.15.0F (4/18/2015), at 652. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 644.</p>

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<p>Cisco IOS 12.4</p> <p>Effective date of registration: 8/12/2005</p>	<pre>Router# show ip route</pre> <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <p>Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2 ia - IS-IS inter area, * - candidate default, U - per-user static route o - ODR, P - periodic downloaded static route</p> </div> <p>Gateway of last resort is not set</p> <p>Cisco IOS IP Routing Protocols Command Reference, Release 12.4 (2005), at IP2R-553</p>	<p>IPv4 Routing Chapter 23 IPv4</p> <p>Examples</p> <ul style="list-style-type: none"> This command displays IP routes learned through BGP. <div style="border: 1px solid red; padding: 5px; margin: 10px 0;"> <pre>switch#show ip route bgp</pre> <p>Codes: C - connected, S - static, K - kernel, O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1, E2 - OSPF external type 2, N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type2, B I - iBGP, B E - eBGP, R - RIP, A - Aggregate</p> </div> <pre>B E 170.44.48.0/23 [20/0] via 170.44.254.78 B E 170.44.50.0/23 [20/0] via 170.44.254.78 B E 170.44.52.0/23 [20/0] via 170.44.254.78 B E 170.44.54.0/23 [20/0] via 170.44.254.78 B E 170.44.254.112/30 [20/0] via 170.44.254.78 B E 170.53.0.34/32 [1/0] via 170.44.254.78 B I 170.53.0.35/32 [1/0] via 170.44.254.2 via 170.44.254.13 via 170.44.254.20 via 170.44.254.67 via 170.44.254.35 via 170.44.254.98 switch#</pre> <p>Arista User Manual v. 4.10.0 (7/19/2012), at 617. Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 840. Arista User Manual v. 4.11.2.1 (3/1/2013), at 880. Arista User Manual v. 4.12.4 (9/16/2013), at 1085. Arista User Manual v. 4.13.6F (4/14/2014), at 1188. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1228. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1250. Arista User Manual v. 4.14.6M (1/19/2015), at 1246. Arista User Manual v. 4.15.0F (4/18/2015), at 1254. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1248. Arista User Manual v. 4.13.7M (6/17/2014), at 1206.</p>

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<p>Cisco IOS 15.2</p> <p>Effective date of registration:</p> <p>11/24/2014</p>	<p>Usage Guidelines This command provides counter information for SNMP operations. It also displays the chassis ID string defined with the <code>snmp-server chassis-id</code> global configuration command.</p> <p>Command Examples The following is sample output from the <code>show snmp</code> command:</p> <pre> Router# show snmp Chassis: 12161083 0 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 0 Number of requested variables 0 Number of altered variables 0 Get-request PDUs 0 Get-next PDUs 0 Set-request PDUs 0 Input queue packet drops (Maximum queue size 1000) 0 SNMP packets output 0 Too big errors (Maximum packet size 1500) 0 No such name errors 0 Bad values errors 0 General errors 0 Response PDUs 0 Trap PDUs SNMP logging: enabled </pre> <p>Cisco IOS SNMP Support Command Reference (2011), at 95-96</p>	<p>Configuring SNMP Chapter 37 SNMP</p> <pre> 8 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 8 Number of requested variables 0 Number of altered variables 4 Get-request PDUs 4 Get-next PDUs 0 Set-request PDUs 21 SNMP packets output 0 Too big errors 0 No such name errors 0 Bad value errors 0 General errors 8 Response PDUs 0 Trap PDUs SNMP logging: enabled Logging to taccon.162 SNMP agent enabled switch(config)# </pre> <p>Arista User Manual v. 4.10.0 (7/19/2012), at 1043. Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1353. Arista User Manual v. 4.11.2.1 (3/1/2013), at 1433. Arista User Manual v. 4.12.4 (9/16/2013), at 1706. Arista User Manual v. 4.13.6F (4/14/2014), at 1896. Arista User Manual v. 4.13.7M (6/17/2014), at 1924. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1968. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1982. Arista User Manual v. 4.14.6M (1/19/2015), at 1978. Arista User Manual v. 4.15.0F (4/18/2015), at 1986. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1980.</p>

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Cisco IOS 15.2 Effective date of registration: 11/24/2014	<div>Command Examples</div> <div>This example shows the output from the <code>show port-security</code> command when you do not enter any options:</div> <div><pre>Router# show port-security</pre><table><thead><tr><th>Secure Port Action</th><th>MaxSecureAddr (Count)</th><th>CurrentAddr (Count)</th><th>SecurityViolation (Count)</th><th>Security Action</th></tr></thead><tbody><tr><td>Fa5/1</td><td>11</td><td>11</td><td>0</td><td>Shutdown</td></tr><tr><td>Fa5/5</td><td>15</td><td>5</td><td>0</td><td>Restrict</td></tr><tr><td>Fa5/11</td><td>5</td><td>4</td><td>0</td><td>Protect</td></tr></tbody></table><div>Total Addresses in System: 21 Max Addresses limit in System: 128 Router#</div></div> <div>Cisco IOS Security Command Reference Commands S to Z (July 2011), at 692</div>	Secure Port Action	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action	Fa5/1	11	11	0	Shutdown	Fa5/5	15	5	0	Restrict	Fa5/11	5	4	0	Protect	<div>Example</div> <div><ul style="list-style-type: none">These commands enable MAC security on Ethernet interface 7, set the maximum number of assigned MAC addresses to 2, assigns two static MAC addresses to the interface, and clears the dynamic MAC addresses for the interface.<pre>switch(config)#interface ethernet 7 switch(config-if-Et7)#switchport port-security switch(config-if-Et7)#switchport port-security maximum 2 switch(config-if-Et7)#exit switch(config)#mac address-table static 0034.24c2.8f11 vlan 10 interface ethernet 7 switch(config)#mac address-table static 4464.842d.17ce vlan 10 interface ethernet 7 switch(config)#clear mac address-table dynamic interface ethernet 7 switch(config)#show port-security</pre><table><thead><tr><th>Secure Port (Count)</th><th>MaxSecureAddr (Count)</th><th>CurrentAddr (Count)</th><th>SecurityViolation (Count)</th><th>Security Action</th></tr></thead><tbody><tr><td>Et7</td><td>2</td><td>2</td><td>0</td><td>Shutdown</td></tr></tbody></table></div> <div>Arista User Manual v. 4.10.0 (7/19/2012), at 318. Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 405-406. Arista User Manual v. 4.11.2.1 (3/1/2013), at 439. Arista User Manual v. 4.12.4 (9/16/2013), at 520. Arista User Manual v. 4.13.6F (4/14/2014), at 624. Arista User Manual v. 4.13.7M (6/17/2014), at 624. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 632. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 634. Arista User Manual v. 4.14.6M (1/19/2015), at 630. Arista User Manual v. 4.15.0F (4/18/2015), at 638. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 630.</div>	Secure Port (Count)	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action	Et7	2	2	0	Shutdown
	Secure Port Action	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action																											
	Fa5/1	11	11	0	Shutdown																											
Fa5/5	15	5	0	Restrict																												
Fa5/11	5	4	0	Protect																												
Secure Port (Count)	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action																												
Et7	2	2	0	Shutdown																												

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<pre>Router# show interface cbr 6/0 CBR6/0 is up, line protocol is up Hardware is DCU MTU 0 bytes, BW 1544 Kbit, DLY 0 usec, rely 255/255, load 248/255 Encapsulation ET ATMCES_T1, loopback not set Last input 00:00:00, output 00:00:00, output hang never Last clearing of "show interface" counters never Queueing strategy: fifo Output queue 0/0, 0 drops; input queue 0/75, 0 drops 5 minute input rate 1507000 bits/sec, 3957 packets/sec 5 minute output rate 1507000 bits/sec, 3955 packets/sec 3025960 packets input, 142220120 bytes, 0 no buffer Received 0 broadcasts, 0 runs, 0 giants 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 3030067 packets output, 142413149 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output buffers swapped out</pre> <p>The table below describes the fields shown in the display.</p> <p>Cisco IOS Asynchronous Transfer Mode Command Reference (2013), at 460</p>	<pre>switch#show interfaces ethernet 1 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff) MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 minutes input rate 301 bps (0.0% with framing), 0 packets/sec 5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec 2285370854005 packets input, 225028582832583 bytes Received 29769609741 broadcasts, 3073437605 multicast 113 runs, 1 giants 118 input errors, 117 CRC, 0 alignment, 18 symbol 27511409 PAUSE input 335031607678 packets output, 27845413138330 bytes Sent 14282316688 broadcasts, 54045824072 multicast 108 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 413. Arista User Manual v. 4.11.2.1 (3/1/2013), at 447. Arista User Manual v. 4.12.4 (9/16/2013), at 533. Arista User Manual v. 4.13.6F (4/14/2014), at 637. Arista User Manual v. 4.13.7M (6/17/2014), at 638. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 646 Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 648. Arista User Manual v. 4.14.6M (1/19/2015), at 644. Arista User Manual v. 4.15.0F (4/18/2015), at 652. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 644.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<pre>Router# show interfaces Ethernet0/0 is up, line protocol is up Hardware is AmdP2, address is aabb.cc03.6c00 (bia aabb.cc03.6c00) Internet address is 172.17.1.1/16 MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive set (10 sec) ARP type: ARPA, ARP Timeout 04:00:00 Last input never, output 00:00:06, output hang never Last clearing of "show interface" counters never Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue: 0/40 (size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 0 packets input, 0 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 input packets with dribble condition detected 11 packets output, 1648 bytes, 0 underruns 0 output errors, 0 collisions, 1 interface resets 0 babbles, 0 late collision, 0 deferred 0 lost carrier, 0 no carrier 0 output buffer failures, 0 output buffers swapped out</pre> <p>Cisco Configuration Fundamentals Configuration Guide, Cisco IOS Release 15M&T (2013), at 44</p>	<pre>switch#show interfaces ethernet 1 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.7302.2fff (bia 001c.7302.2fff) MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 minutes input rate 301 bps (0.0% with framing), 0 packets/sec 5 minutes output rate 0 bps (0.0% with framing), 0 packets/sec 2285370854005 packets input, 225028582832583 bytes Received 29769609741 broadcasts, 3073437605 multicast 113 runts, 1 giants 118 input errors, 117 CRC, 0 alignment, 18 symbol 27511409 PAUSE input 335031607678 packets output, 27845413138330 bytes Sent 14282316688 broadcasts, 54045824072 multicast 108 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 413. Arista User Manual v. 4.11.2.1 (3/1/2013), at 447. Arista User Manual v. 4.12.4 (9/16/2013), at 533. Arista User Manual v. 4.13.6F (4/14/2014), at 637. Arista User Manual v. 4.13.7M (6/17/2014), at 638. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 646. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 648. Arista User Manual v. 4.14.6M (1/19/2015), at 644. Arista User Manual v. 4.15.0F (4/18/2015), at 652. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 644.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Use the <code>show interface interface-type interface-number</code> command to display the information and statistics for Ethernet 0 on R4.</p> <pre>R4> show interface ethernet 0 Ethernet0 is up, line protocol is up Hardware is Lance, address is 00e0.1eb8.eb0e (bia 00e0.1eb8.eb0e) The MAC address for Ethernet 0 on R4 is 00e0.1eb8.eb0e. The format of the client identifier for this interface is nullcisco-00e0.1eb8.eb0e-et0.</pre> <p>Cisco Configuration Fundamentals Configuration Guide, Cisco IOS Release 15M&T (2013), at 81</p>	<p>This command assigns the MAC address of 001c.2804.17e1 to Ethernet interface 7, then displays interface parameters, including the assigned address.</p> <pre>switch(config)#interface ethernet 7 switch(config-if-Et7)#mac-address 001c.2804.17e1 switch(config-if-Et7)#show interface ethernet 7 Ethernet3 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2)</pre> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 312. Arista User Manual v. 4.11.2.1 (3/1/2013), at 342. Arista User Manual v. 4.12.4 (9/16/2013), at 390. Arista User Manual v. 4.13.6F (4/14/2014), at 429. Arista User Manual v. 4.13.7M (6/17/2014), at 429. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 437 Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 439. Arista User Manual v. 4.14.6M (1/19/2015), at 435. Arista User Manual v. 4.15.0F (4/18/2015), at 443. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 435.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>show ip igmp snooping</p> <p>To display the Internet Group Management Protocol (IGMP) snooping configuration of a device, use the show ip igmp snooping command in user EXEC or privileged EXEC mode.</p> <p>show ip igmp snooping [groups [count] vlan vlan-id [ip-address] count]] mrouter [[vlan vlan-id]] [bd bd-id]] [querier vlan vlan-id bd bd-id]</p> <p>Cisco IOS Multicast Command Reference at 625 (2013)</p> <p>The following is sample output from the show ip igmp snooping command:</p> <pre>Router# show ip igmp snooping Global IGMP Snooping configuration: ----- IGMP snooping : Enabled IGMPv3 snooping (minimal) : Enabled Report suppression : Enabled TCN solicit query : Disabled TCN flood query count : 2 Last Member Query Interval : 1000</pre> <p>IOS Multicast Command Reference (2013), at 625</p>	<p>IGMP Snooping Status</p> <p>The show ip igmp snooping command displays the Internet Group Management Protocol (IGMP) snooping configuration of a device.</p> <p>Example</p> <ul style="list-style-type: none"> This command displays the switch's IGMP snooping configuration. <pre>switch>show ip igmp snooping Global IGMP Snooping configuration: ----- IGMP snooping : Enabled Robustness variable : 2</pre> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1263. Arista User Manual v. 4.11.2.1 (3/1/2013), at 1339. Arista User Manual v. 4.12.4 (9/16/2013), at 1559. Arista User Manual v. 4.13.6F (4/14/2014), at 1733. Arista User Manual v. 4.13.7M (6/17/2014), at 1810. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1785. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1799. Arista User Manual v. 4.14.6M (1/19/2015), at 1794. Arista User Manual v. 4.15.0F (4/18/2015), at 1803. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1797.</p>

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Cisco IOS 15.4 Effective date of registration: 11/26/2014	<div>show interfaces transceiver</div> <p>To display information about the optical transceivers that have digital optical monitoring (DOM) enabled, use the show interfaces transceiver command in privileged EXEC mode.</p> <p>Catalyst 6500 Series Switches and Cisco 7600 Series Routers</p> <div>show interfaces [interface interface-number] transceiver [threshold violations] properties [detail] module number</div> <p>Cisco 7200 VXR</p> <div>show interfaces [interface interface-number] transceiver</div> <p>Cisco ASR 901 Routers</p> <div>show interfaces [interface interface-number] transceiver [threshold {table violations} detail supported-list]</div> <p>Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 1878</p> <div>Examples</div> <p>This example shows how to display transceiver information:</p> <div>Router# show interfaces transceiver If device is externally calibrated, only calibrated values are printed. ++ : high alarm, + : high warning, - : low warning, -- : low alarm. NA or N/A: not applicable, Tx: transmit, Rx: receive. mA: milliamperes, dBm: decibels (milliwatts).</div> <table><thead><tr><th>Port</th><th>Temperature (Celsius)</th><th>Voltage (Volts)</th><th>Current (mA)</th><th>Optical Tx Power (dBm)</th><th>Optical Rx Power (dBm)</th></tr></thead><tbody><tr><td>Gi1/1</td><td>40.6</td><td>5.09</td><td>0.4</td><td>-25.2</td><td>N/A</td></tr><tr><td>Gi2/1</td><td>35.5</td><td>5.05</td><td>0.1</td><td>-29.2</td><td>N/A</td></tr><tr><td>Gi2/2</td><td>49.5</td><td>3.30</td><td>0.0</td><td>7.1</td><td>-18.7</td></tr></tbody></table> <p>Cisco IOS Interfaces and Hardware Component Command Reference (2013), at 1879</p>	Port	Temperature (Celsius)	Voltage (Volts)	Current (mA)	Optical Tx Power (dBm)	Optical Rx Power (dBm)	Gi1/1	40.6	5.09	0.4	-25.2	N/A	Gi2/1	35.5	5.05	0.1	-29.2	N/A	Gi2/2	49.5	3.30	0.0	7.1	-18.7	<div>show interfaces transceiver</div> <p>The show interfaces transceiver command displays operational transceiver data for the specified interfaces.</p> <p>Platform all Command Mode EXEC</p> <p>Command Syntax</p> <div>show interfaces [INTERFACE] transceiver [DATA_FORMAT]</div> <p>...</p> <div>Examples</div> <ul style="list-style-type: none">This command displays transceiver data on Ethernet interfaces 1 through 4. <div>switch>show interfaces ethernet 1-4 transceiver If device is externally calibrated, only calibrated values are printed. N/A: not applicable, Tx: transmit, Rx: receive. mA: milliamperes, dBm: decibels (milliwatts).</div> <table><thead><tr><th>Port</th><th>Temp (Celsius)</th><th>Voltage (Volts)</th><th>Bias Current (mA)</th><th>Optical Tx Power (dBm)</th><th>Optical Rx Power (dBm)</th><th>Last Update (Date Time)</th></tr></thead><tbody><tr><td>Et1</td><td>34.17</td><td>3.30</td><td>6.75</td><td>-2.41</td><td>-2.83</td><td>2011-12-02 16:18:48</td></tr><tr><td>Et2</td><td>35.08</td><td>3.30</td><td>6.75</td><td>-2.23</td><td>-2.06</td><td>2011-12-02 16:18:42</td></tr><tr><td>Et3</td><td>36.72</td><td>3.30</td><td>7.20</td><td>-2.02</td><td>-2.14</td><td>2011-12-02 16:18:49</td></tr><tr><td>Et4</td><td>35.91</td><td>3.30</td><td>6.92</td><td>-2.20</td><td>-2.23</td><td>2011-12-02 16:18:45</td></tr></tbody></table> <div>switch></div> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 326. Arista User Manual v. 4.11.2.1 (3/1/2013), at 356. Arista User Manual v. 4.12.4 (9/16/2013), at 404. Arista User Manual v. 4.13.6F (4/14/2014), at 443. Arista User Manual v. 4.13.7M (6/17/2014), at 443. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 451. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 453. Arista User Manual v. 4.14.6M (1/19/2015), at 449. Arista User Manual v. 4.15.0F (4/18/2015), at 457. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 449.</p>	Port	Temp (Celsius)	Voltage (Volts)	Bias Current (mA)	Optical Tx Power (dBm)	Optical Rx Power (dBm)	Last Update (Date Time)	Et1	34.17	3.30	6.75	-2.41	-2.83	2011-12-02 16:18:48	Et2	35.08	3.30	6.75	-2.23	-2.06	2011-12-02 16:18:42	Et3	36.72	3.30	7.20	-2.02	-2.14	2011-12-02 16:18:49	Et4	35.91	3.30	6.92	-2.20	-2.23	2011-12-02 16:18:45
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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<div data-bbox="310 297 1087 415"> <div> <i>start-ip</i> <div>Starting IP address that defines the range of addresses in the address pool.</div> </div> <div> <i>end-ip</i> <div>Ending IP address that defines the range of addresses in the address pool.</div> </div> </div> <p>Cisco IOS IP Addressing Services Command Reference at 22 (2011)</p>	<div data-bbox="1182 272 2039 391"> <div> <i>start_addr</i> <div>The starting IP address that defines the range of addresses in the address pool (IPv4 addresses in dotted decimal notation).</div> </div> <div> <i>end_addr</i> <div>The ending IP address that defines the range of addresses in the address pool. (IPv4 addresses in dotted decimal notation).</div> </div> </div> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 1121. Arista User Manual v. 4.13.6F (4/14/2014), at 1233. Arista User Manual v. 4.13.7M (6/17/2014), at 1251. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/2014), at 1278 Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1299. Arista User Manual v. 4.14.6M (1/19/2015), at 1295. Arista User Manual v. 4.15.0F (4/18/2015), at 1303. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1297.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>The following is sample output from the <code>show ip ospf</code> command when entered without a specific OSPF process ID:</p> <pre> Router# show ip ospf Routing Process "ospf 201" with ID 10.0.0.1 and Domain ID 10.20.0.1 Supports only single IOS(1050) routes Supports opaque LSA SPF schedule delay 5 secs, Hold time between two SPFs 10 secs Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs LSA group pacing timer 100 secs Interface flood pacing timer 55 msecs Retransmission pacing timer 100 msecs Number of external LSA 0. Checksum Sum 0x0 Number of opaque AS LSA 0. Checksum Sum 0x0 Number of DCbitless external and opaque AS LSA 0 Number of DoNotAge external and opaque AS LSA 0 Number of areas in this router is 2. 2 normal 0 stub 0 nssa External flood list length 0 Area BACKBONE(0) Number of interfaces in this area is 2 Area has message digest authentication SPF algorithm executed 4 times Area ranges are Number of LSA 4. Checksum Sum 0x29BEB Number of opaque link LSA 0. Checksum Sum 0x0 Number of DCbitless LSA 3 Number of indication LSA 0 Number of DoNotAge LSA 0 Flood list length 0 Area 172.16.26.0 Number of interfaces in this area is 0 Area has no authentication SPF algorithm executed 1 times Area ranges are 192.168.0.0/16 Passive Advertise Number of LSA 1. Checksum Sum 0x44FD Number of opaque link LSA 0. Checksum Sum 0x0 Number of DCbitless LSA 1 Number of indication LSA 1 Number of DoNotAge LSA 0 Flood list length 0 </pre> <p>Cisco IOS IP Routing:OSPF Command Reference (2013), at 174</p>	<pre> switch# show ip ospf Routing Process "ospf 1" with ID 10.168.103.1 Supports opaque LSA Maximum number of LSA allowed 12000 Threshold for warning message 75% Ignore-time 5 minutes, reset-time 5 minutes Ignore-count allowed 5, current 0 It is an area border router Hold time between two consecutive SPFs 5000 msecs SPF algorithm last executed 00:00:09 ago Minimum LSA interval 5 secs Minimum LSA arrival 1000 msecs Number of external LSA 0. Checksum Sum 0x000000 Number of opaque AS LSA 0. Checksum Sum 0x000000 Number of LSA 27. Number of areas in this router is 3. 3 normal 0 stub 0 nssa Area BACKBONE(0.0.0.0) Number of interfaces in this area is 2 It is a normal area Area has no authentication SPF algorithm executed 153 times Number of LSA 8. Checksum Sum 0x03e13a Number of opaque link LSA 0. Checksum Sum 0x000000 Area 0.0.0.2 Number of interfaces in this area is 1 It is a normal area Area has no authentication SPF algorithm executed 153 times Number of LSA 11. Checksum Sum 0x054e57 Number of opaque link LSA 0. Checksum Sum 0x000000 Area 0.0.0.3 Number of interfaces in this area is 1 It is a normal area Area has no authentication SPF algorithm executed 5 times Number of LSA 6. Checksum Sum 0x02a401 Number of opaque link LSA 0. Checksum Sum 0x000000 </pre> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 947. Arista User Manual v. 4.11.2.1 (3/1/2013), at 991. Arista User Manual v. 4.12.4 (9/16/2013), at 1226. Arista User Manual v. 4.13.6F (4/14/2014), at 1341-1342. Arista User Manual v. 4.13.7M (6/17/2014), at 1359-1360. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1391-1392. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1413. Arista User Manual v. 4.14.6M (1/19/2015), at 1409. Arista User Manual v. 4.15.0F (4/18/2015), at 1417. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1411.</p>

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<p>Cisco IOS 15.4</p> <p>Effective date of registration: 11/26/2014</p>	<p>Examples</p> <p>The following is sample output from the <code>show snmp</code> command:</p> <pre> Router# show snmp Chassis: 12161083 0 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 0 Number of requested variables 0 Number of altered variables 0 Get-request PDUs 0 Get-next PDUs 0 Set-request PDUs 0 Input queue packet drops (Maximum queue size 1000) 0 SNMP packets output 0 Too big errors (Maximum packet size 1500) 0 No such name errors 0 Bad values errors 0 General errors 0 Response PDUs 0 Trap PDUs SNMP logging: enabled SNMP trap Queue: 0 dropped due to resource failure. </pre> <p>Cisco IOS SNMP Support Command Reference (2013), at 83</p>	<p>Example</p> <ul style="list-style-type: none"> This command configures <code>xyz-1234</code> as the chassis-ID string, then displays the result. <pre> switch(config)#snmp-server chassis-id xyz-1234 switch(config)#show snmp Chassis: xyz-1234 <---chassis ID 8 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 8 Number of requested variables 0 Number of altered variables 4 Get-request PDUs 4 Get-next PDUs 0 Set-request PDUs 21 SNMP packets output 0 Too big errors 0 No such name errors 0 Bad value errors 0 General errors 8 Response PDUs 0 Trap PDUs SNMP logging: enabled Logging to taccon.162 SNMP agent enabled switch(config)# </pre> <p>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1352-1353. Arista User Manual v. 4.11.2.1 (3/1/2013), at 1432-1433. Arista User Manual v. 4.12.4 (9/16/2013), at 1705-1706. Arista User Manual v. 4.13.6F (4/14/2014), at 1895-1896. Arista User Manual v. 4.13.7M (6/17/2014), at 1923-1924. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1967-68. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1981-82. Arista User Manual v. 4.14.6M (1/19/2015), at 1977-1978. Arista User Manual v. 4.15.0F (4/18/2015), at 1985-1986. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1979-1980</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<table><tr><td>IGMP version</td><td>2</td></tr><tr><td>Startup query interval</td><td>30 seconds</td></tr><tr><td>Startup query count</td><td>2</td></tr><tr><td>Robustness value</td><td>2</td></tr><tr><td>Querier timeout</td><td>255 seconds</td></tr><tr><td>Query timeout</td><td>255 seconds</td></tr><tr><td>Query max response time</td><td>10 seconds</td></tr><tr><td>Query interval</td><td>125 seconds</td></tr><tr><td>Last member query response interval</td><td>1 second</td></tr><tr><td>Last member query count</td><td>2</td></tr><tr><td>Group membership timeout</td><td>260 seconds</td></tr><tr><td>Report link local multicast groups</td><td>Disabled</td></tr><tr><td>Enforce router alert</td><td>Disabled</td></tr><tr><td>Immediate leave</td><td>Disabled</td></tr></table>	IGMP version	2	Startup query interval	30 seconds	Startup query count	2	Robustness value	2	Querier timeout	255 seconds	Query timeout	255 seconds	Query max response time	10 seconds	Query interval	125 seconds	Last member query response interval	1 second	Last member query count	2	Group membership timeout	260 seconds	Report link local multicast groups	Disabled	Enforce router alert	Disabled	Immediate leave	Disabled	<pre>Current IGMP router version: 2 IGMP query interval: 125 seconds IGMP max query response time: 100 deciseconds Last member query response interval: 10 deciseconds Last member query response count: 2 IGMP querier: 172.17.26.1 Robustness: 2 Require router alert: enabled Startup query interval: 312 deciseconds Startup query count: 2 General query timer expiry: 00:00:22 Multicast groups joined: 239.255.255.250</pre>
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	Enforce router alert	Disabled																												
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Arista User Manual v. 4.10.0 (7/19/2012), at 970. Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1261. Arista User Manual v. 4.11.2.1 (3/1/2013), at 1337. Arista User Manual v. 4.12.4 (9/16/2013), at 1606. Arista User Manual v. 4.13.6F (4/14/2014), at 1780. Arista User Manual v. 4.13.7M (6/17/2014), at 1808. Arista User Manual v. 4.14.3F - Rev. 2 (10/2/14), at 1850. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1864. Arista User Manual v. 4.14.6M (1/19/2015), at 1860. Arista User Manual v. 4.15.0F (4/18/2015), at 1868. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1862.																														

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display VTP interface switchport information on the device:</p> <pre>switch# show interface switchport Name: Ethernet8/11 Switchport: Enabled Switchport Monitor: Not enabled Operational Mode: trunk Access Mode VLAN: 1 (default) Trunking Native Mode VLAN: 1 (default) Trunking VLANs Enabled: 1,10,20-30 Pruning VLANs Enabled: 2-1001 Administrative private-vlan primary host-association: none Administrative private-vlan secondary host-association: none Administrative private-vlan primary mapping: none Administrative private-vlan secondary mapping: none Administrative private-vlan trunk native VLAN: none Administrative private-vlan trunk encapsulation: dot1q Administrative private-vlan trunk normal VLANs: none Administrative private-vlan trunk private VLANs: none Operational private-vlan: none switch#</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 44</p>	<p>Example</p> <ul style="list-style-type: none"> These commands create the trunk mode allowed VLAN list of 6-10 for Ethernet interface 14, then verifies the VLAN list. <pre>switch(config)#interface ethernet 14 switch(config-if-Et14)#switchport trunk allowed vlan 6-10 switch(config-if-Et14)#show interfaces ethernet 14 switchport Name: Et14 Switchport: Enabled Administrative Mode: trunk Operational Mode: trunk Access Mode VLAN: 1 (inactive) Trunking Native Mode VLAN: 1 (inactive) Administrative Native VLAN tagging: disabled Trunking VLANs Enabled: 6-10 Trunk Groups: switch(config-if-Et14)#</pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 665. Arista User Manual v. 4.13.6F (4/14/2014), at 773. Arista User Manual v. 4.13.7M (6/17/2014), at 791. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 798. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 800. Arista User Manual v. 4.14.6M (1/19/2015), at 796. Arista User Manual v. 4.15.0F (4/18/2015), at 804. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 796.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display information about the specified VLAN. This command displays statistical information gathered on the VLAN at 1-minute intervals:</p> <pre>switch# show interface vlan 5 Vlan5 is administratively down, line protocol is down Hardware is EtherSVI, address is 0000.0000.0000 MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive not supported ARP type: ARPA Last clearing of "show interface" counters 01:21:55 1 minute input rate 0 bytes/sec, 0 packets/sec 1 minute output rate 0 bytes/sec, 0 packets/sec L3 Switched: input: 0 pkts, 0 bytes - output: 0 pkts, 0 bytes L3 in Switched: ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes L3 out Switched: ucast: 0 pkts, 0 bytes - mcast: 0 pkts, 0 bytes</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 44</p>	<p>Example</p> <ul style="list-style-type: none"> This command display configuration and status information for Ethernet interface 1 and 2. <pre>switch>show interfaces ethernet 1-2 Ethernet1 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.2481.7647 (bia 001c.2481.7647) Description: mkt.1 MTU 9212 bytes, BW 10000000 Kbit Full-duplex 10Gb/s auto negotiation: off Last clearing of "show interface" counters never 5 seconds input rate 33.5 Mbps (0.3% with framing), 846 packets/sec 5 seconds output rate 180 kbps (0.0% with framing), 55 packets/sec 76437268 packets input, 94280286608 bytes Received 2208 broadcasts, 73358 multicast 0 runs, 0 giants 0 input errors, 0 CRC, 0 alignment, 0 symbol 0 PAUSE input 6184281 packets output, 4071319140 bytes Sent 2209 broadcasts, 345754 multicast 0 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output</pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 567. Arista User Manual v. 4.13.6F (4/14/2014), at 672. Arista User Manual v. 4.13.7M (6/17/2014), at 673. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 681. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 683. Arista User Manual v. 4.14.6M (1/19/2015), at 679. Arista User Manual v. 4.15.0F (4/18/2015), at 687. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 679.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display STP when you are running Rapid PVST+:</p> <pre>switch# show spanning-tree</pre> <pre>VLAN0001 Spanning tree enabled protocol rstp Root ID Priority 32769 Address 000d.eca3.9f01 Cost 4 Port 4105 (port-channel10) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec</pre> <pre> Bridge ID Priority 32769 (priority 32768 sys-id-ext 1) Address 0022.5579.7641 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role Sts Cost Prio.Nbr Type ----- Po10 Root FWD 2 128.4105 (vPC peer-link) P2p Po20 Desg FWD 1 128.4115 (vPC) P2p Po30 Root FWD 1 128.4125 (vPC) P2p </pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 63</p>	<p>Show commands (such as show spanning-tree) displays the RSTP instance as MST0 (MST instance 0).</p> <p>Example</p> <ul style="list-style-type: none"> This command, while the switch is in RST mode, displays RST instance information. <pre>switch(config)#show spanning-tree</pre> <pre>MST0 Spanning tree enabled protocol rstp Root ID Priority 32768 Address 001c.730c.1867 This bridge is the root</pre> <p style="text-align: right;"><i><---RSTP mode indicator</i></p> <pre> Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 001c.730c.1867 Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec Interface Role State Cost Prio.Nbr Type ----- Et51 designated forwarding 2000 128.51 P2p </pre> <pre>switch(config)#</pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 860. Arista User Manual v. 4.13.6F (4/14/2014), at 924. Arista User Manual v. 4.13.7M (6/17/2014), at 942. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 960. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 962. Arista User Manual v. 4.14.6M (1/19/2015), at 958. Arista User Manual v. 4.15.0F (4/18/2015), at 966. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 958.</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>This example shows how to display STP information when you are running MST:</p> <pre>switch# show spanning-tree</pre> <pre>MST0000 Spanning tree enabled protocol mstp Root ID Priority 32768 Address 0018.bad8.fc150 Cost 0 Port 258 (Ethernet 2/2) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec</pre> <pre>Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 0018.bad8.239d Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec</pre> <table><thead><tr><th>Interface</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>Eth2/1</td><td>Ath</td><td>BRN</td><td>20000</td><td>128.257</td><td>Network, P2p BA_1RC.</td></tr><tr><td>Eth2/2</td><td>Root</td><td>FWD</td><td>20000</td><td>128.258</td><td>Edge, P2p</td></tr><tr><td>Eth3/48</td><td>Desg</td><td>FWD</td><td>20000</td><td>128.43228</td><td>P2p</td></tr></tbody></table> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 63</p>	Interface	Role	Sts	Cost	Prio.Nbr	Type	Eth2/1	Ath	BRN	20000	128.257	Network, P2p BA_1RC.	Eth2/2	Root	FWD	20000	128.258	Edge, P2p	Eth3/48	Desg	FWD	20000	128.43228	P2p	<p>This command displays output from the show spanning-tree command:</p> <pre>Switch#show spanning-tree</pre> <pre>MST0 Spanning tree enabled protocol mstp Root ID Priority 32768 Address 0011.2201.0301 This bridge is the root</pre> <table><thead><tr><th>Bridge ID</th><th>Priority</th><th>32768 (priority 32768 sys-id-ext 0)</th></tr></thead><tbody><tr><td>Address</td><td>0011.2201.0301</td><td></td></tr><tr><td>Hello Time</td><td>2 sec</td><td>Max Age 20 sec Forward Delay 15 sec</td></tr></tbody></table> <table><thead><tr><th>Interface</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>Et4</td><td>designated</td><td>forwarding</td><td>2000</td><td>128.4</td><td>P2p</td></tr><tr><td>Et5</td><td>designated</td><td>forwarding</td><td>2000</td><td>128.5</td><td>P2p</td></tr><tr><td>...</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>PEt4</td><td>designated</td><td>forwarding</td><td>2000</td><td>128.31</td><td>P2p</td></tr><tr><td>PEt5</td><td>designated</td><td>forwarding</td><td>2000</td><td>128.44</td><td>P2p</td></tr><tr><td>...</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Po3</td><td>designated</td><td>forwarding</td><td>1999</td><td>128.1003</td><td>P2p</td></tr></tbody></table> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 883. Arista User Manual v. 4.13.6F (4/14/2014), at 947. Arista User Manual v. 4.13.7M (6/17/2014), at 965. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 985. Arista User Manual v. 4.14.6M (1/19/2015), at 981. Arista User Manual v. 4.15.0F (4/18/2015), at 989. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 981.</p>	Bridge ID	Priority	32768 (priority 32768 sys-id-ext 0)	Address	0011.2201.0301		Hello Time	2 sec	Max Age 20 sec Forward Delay 15 sec	Interface	Role	State	Cost	Prio.Nbr	Type	Et4	designated	forwarding	2000	128.4	P2p	Et5	designated	forwarding	2000	128.5	P2p	...						PEt4	designated	forwarding	2000	128.31	P2p	PEt5	designated	forwarding	2000	128.44	P2p	...						Po3	designated	forwarding	1999	128.1003	P2p
	Interface	Role	Sts	Cost	Prio.Nbr	Type																																																																													
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Et4	designated	forwarding	2000	128.4	P2p																																																																														
Et5	designated	forwarding	2000	128.5	P2p																																																																														
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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<pre> Spanning tree enabled protocol rstp Root ID Priority 32768 Address 000d.eca3.9f01 Cost 4 Port 4105 (port-channel10) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 32770 (priority 32768 sys-id-ext 2) Address 0022.5579.7641 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Interface Role Sts Cost Prio.Nbr Type ----- Po10 Root FWD 2 128.4105 (vPC peer-link) P2p Po20 Desg FWD 1 128.4115 (vPC) P2p Po30 Root FWD 1 128.4125 (vPC) P2p </pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 73</p>	<pre> Spanning tree enabled protocol rstp Root ID Priority 32768 Address 001c.7301.07b9 Cost 1999 (Ext) 0 (Int) Port 101 (Port-Channel12) Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 32768 (priority 32768 sys-id-ext 0) Address 001c.7304.195b Hello Time 2.000 sec Max Age 20 sec Forward Delay 15 sec Interface Role State Cost Prio.Nbr Type ----- Et4 designated forwarding 20000 128.4 P2p Et5 designated forwarding 20000 128.5 P2p Et6 designated forwarding 20000 128.6 P2p Et23 designated forwarding 20000 128.23 P2p Et26 designated forwarding 20000 128.26 P2p Et32 designated forwarding 2000 128.32 P2p </pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 883. Arista User Manual v. 4.13.6F (4/14/2014), at 947. Arista User Manual v. 4.13.7M (6/17/2014), at 965. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 983. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 985. Arista User Manual v. 4.14.6M (1/19/2015), at 981. Arista User Manual v. 4.15.0F (4/18/2015), at 989. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 981.</p>

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display detailed information about the STP configuration:</p> <pre>switch(config)# show spanning-tree detail</pre> <p>VLAN0001 is executing the rstp compatible Spanning Tree protocol</p> <p>Bridge Identifier has priority 32768, sysid 1, address 0022.5579.7641</p> <p>Configured hello time 2, max age 20, forward delay 15</p> <p>Current root has priority 32769, address 000d.eca3.9f01</p> <p>Root port is 4105 (port-channel10), cost of root path is 4</p> <p>Topology change flag not set, detected flag not set</p> <p>Number of topology changes 1 last change occurred 20:24:36 ago from port-channel10</p> <p>Times: hold 1, topology change 35, notification 2 hello 2, max age 20, forward delay 15</p> <p>Timers: hello 0, topology change 0, notification 0</p> <p>Port 4105 (port-channel10, VPC Peer-link) of VLAN0001 is root forwarding</p> <p>Port path cost 2, Port priority 128, Port Identifier 128.4105</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 0022.5579.7341</p> <p>Designated port id is 128.4105, designated path cost 2</p> <p>Timers: message age 16, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 36729, received 36739</p> <p>Port 4115 (port-channel20, VPC) of VLAN0001 is designated forwarding</p> <p>Port path cost 1, Port priority 128, Port Identifier 128.4115</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 0022.5579.7341</p> <p>Designated port id is 128.4115, designated path cost 2</p> <p>Timers: message age 0, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 0</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 0, received 0</p> <p>Port 4125 (port-channel30, VPC) of VLAN0001 is root forwarding</p> <p>Port path cost 1, Port priority 128, Port Identifier 128.4125</p> <p>Designated root has priority 32769, address 000d.eca3.9f01</p> <p>Designated bridge has priority 32769, address 000d.eca3.9f01</p> <p>Designated port id is 128.4125, designated path cost 0</p> <p>Timers: message age 0, forward delay 0, hold 0</p> <p>Number of transitions to forwarding state: 0</p> <p>Link type is point-to-point by default</p> <p>BPDU: sent 0, received 0</p> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 73</p>	<ul style="list-style-type: none"> This command displays STP data, including an information block for each interface running STP. <pre>switch>show spanning-tree vlan 1000 detail</pre> <p>MST0 is executing the rstp Spanning Tree protocol</p> <p>Bridge Identifier has priority 32768, sysid 0, address 001c.7304.195b</p> <p>Configured hello time 2.000, max age 20, forward delay 15, transmit hold-count 6</p> <p>Current root has priority 32768, address 001c.7301.07b9</p> <p>Root port is 101 (Port-Channel2), cost of root path is 1999 (Ext) 0 (Int)</p> <p>Number of topology changes 4109 last change occurred 1292651 seconds ago from Ethernet13</p> <p>Port 4 (Ethernet4) of MST0 is designated forwarding</p> <p>Port path cost 20000, Port priority 128, Port Identifier 128.4.</p> <p>Designated root has priority 32768, address 001c.7301.07b9</p> <p>Designated bridge has priority 32768, address 001c.7304.195b</p> <p>Designated port id is 128.4, designated path cost 1999 (Ext) 0 (Int)</p> <p>Timers: message age 1, forward delay 15, hold 20</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default, Internal</p> <p>BPDU: sent 452252, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0</p> <p>Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400</p> <p>Port 5 (Ethernet5) of MST0 is designated forwarding</p> <p>Port path cost 20000, Port priority 128, Port Identifier 128.5.</p> <p>Designated root has priority 32768, address 001c.7301.07b9</p> <p>Designated bridge has priority 32768, address 001c.7304.195b</p> <p>Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int)</p> <p>Timers: message age 1, forward delay 15, hold 20</p> <p>Number of transitions to forwarding state: 1</p> <p>Link type is point-to-point by default, Internal</p> <p>BPDU: sent 1006266, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0</p> <p>Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400</p> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 884.</p> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 948.</p> <p>Arista User Manual v. 4.13.7M (6/17/2014), at 966.</p> <p>Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 984.</p> <p>Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 986.</p> <p>Arista User Manual v. 4.14.6M (1/19/2015), at 982.</p> <p>Arista User Manual v. 4.15.0F (4/18/2015), at 990.</p> <p>Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 982.</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>This example shows how to display STP information about a specified interface when you are running Rapid PVST+:</p> <pre>switch(config)# show spanning-tree interface ethernet 8/2</pre> <table><thead><tr><th>Vlan</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>VLAN0001</td><td>Altn</td><td>BLK</td><td>20000</td><td>128.1025</td><td>P2p</td></tr><tr><td>VLAN0002</td><td>Desg</td><td>FWD</td><td>20000</td><td>128.1025</td><td>P2p</td></tr></tbody></table> <p>This example shows how to display STP information about a specified interface when you are running MST:</p> <pre>switch(config)# show spanning-tree interface ethernet 2/50</pre> <table><thead><tr><th>Mst</th><th>Instance</th><th>Role</th><th>Sts</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>MST0000</td><td></td><td>Desg</td><td>FWD</td><td>20000</td><td>128.1281</td><td>P2p</td></tr></tbody></table> <p>This example shows how to display detailed STP information about a specified interface when you are running Rapid PVST+:</p> <pre>switch(config)# show spanning-tree interface ethernet 8/1 detail</pre> <p>Port 1025 (Ethernet8/1) of VLAN0001 is alternate blocking Port path cost 20000, Port priority 128, Port Identifier 128.1025 Designated root has priority 28672, address 0018.bad8.239d Designated bridge has priority 28672, address 0018.bad8.239d Designated port id is 128.1281, designated path cost 0 Timers: message age 15, forward delay 0, hold 0 Number of transitions to forwarding state: 1 Link type is point-to-point by default The port type is network by default. BPDU: sent 4657, received 188</p> <p>Port 1025 (Ethernet8/1) of VLAN0002 is designated forwarding Port path cost 20000, Port priority 128, Port Identifier 128.1025 Designated root has priority 32770, address 0018.bad7.fc15 Designated bridge has priority 32770, address 0018.bad7.fc15 Designated port id is 128.1025, designated path cost 0 Timers: message age 0, forward delay 0, hold 0 Number of transitions to forwarding state: 1 Link type is point-to-point by default The port type is network by default. BPDU: sent 4838, received 0</p>	Vlan	Role	Sts	Cost	Prio.Nbr	Type	VLAN0001	Altn	BLK	20000	128.1025	P2p	VLAN0002	Desg	FWD	20000	128.1025	P2p	Mst	Instance	Role	Sts	Cost	Prio.Nbr	Type	MST0000		Desg	FWD	20000	128.1281	P2p	<p>Examples</p> <ul style="list-style-type: none">This command displays an STP table for Ethernet 5 interface. <pre>switch#show spanning-tree interface ethernet 5</pre> <table><thead><tr><th>Instance</th><th>Role</th><th>State</th><th>Cost</th><th>Prio.Nbr</th><th>Type</th></tr></thead><tbody><tr><td>MST0</td><td>designated</td><td>forwarding</td><td>20000</td><td>128.5</td><td>P2p</td></tr></tbody></table> <pre>switch></pre> <ul style="list-style-type: none">This command displays a data block for Ethernet interface 5. <pre>switch#show spanning-tree interface ethernet 5 detail</pre> <p>Port 5 (Ethernet5) of MST0 is designated forwarding Port path cost 20000, Port priority 128, Port Identifier 128.5. Designated root has priority 32768, address 001c.7301.07b9 Designated bridge has priority 32768, address 001c.7304.195b Designated port id is 128.5, designated path cost 1999 (Ext) 0 (Int) Timers: message age 1, forward delay 15, hold 20 Number of transitions to forwarding state: 1 Link type is point-to-point by default, Internal BPDU: sent 1008766, received 0, taggedErr 0, otherErr 0, rateLimiterCount 0 Rate-Limiter: enabled, Window: 10 sec, Max-BPDU: 400<pre>switch></pre><p>Arista User Manual v. 4.12.4 (9/16/2013), at 888. Arista User Manual v. 4.13.6F (4/14/2014), at 952. Arista User Manual v. 4.13.7M (6/17/2014), at 970. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 988. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 990. Arista User Manual v. 4.14.6M (1/19/2015), at 986. Arista User Manual v. 4.15.0F (4/18/2015), at 994. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 986.</p></p>	Instance	Role	State	Cost	Prio.Nbr	Type	MST0	designated	forwarding	20000	128.5	P2p
	Vlan	Role	Sts	Cost	Prio.Nbr	Type																																								
VLAN0001	Altn	BLK	20000	128.1025	P2p																																									
VLAN0002	Desg	FWD	20000	128.1025	P2p																																									
Mst	Instance	Role	Sts	Cost	Prio.Nbr	Type																																								
MST0000		Desg	FWD	20000	128.1281	P2p																																								
Instance	Role	State	Cost	Prio.Nbr	Type																																									
MST0	designated	forwarding	20000	128.5	P2p																																									
Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 77.																																														

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```
switch# show spanning-tree mst

##### MST0    vlans mapped: 1-4094
Bridge         address 0018.bad7.fc15 priority 32768 (32768 sysid 0)
Root           this switch for the CIST
Regional Root  this switch
Operational    hello time 2 , forward delay 15, max age 20, txholdcount 6
Configured     hello time 2 , forward delay 15, max age 20, max hops 20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Eth8/1         Desg FWD 20000 128.1025 P2p
Eth8/2         Desg FWD 20000 128.1026 P2p

This example shows how to display STP information about a specific MST instance:

switch# show spanning-tree mst 0

##### MST0    vlans mapped: 1-4094
Bridge         address 0018.bad7.fc15 priority 32768 (32768 sysid 0)
Root           this switch for the CIST
Regional Root  this switch
Operational    hello time 2 , forward delay 15, max age 20, txholdcount 6
Configured     hello time 2 , forward delay 15, max age 20, max hops 20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Eth8/1         Desg FWD 20000 128.1025 P2p
Eth8/2         Desg FWD 20000 128.1026 P2p

This example shows how to display detailed STP information about the MST protocol:

switch# show spanning-tree mst detail

##### MST0    vlans mapped: 1-4094
Bridge         address 0018.bad7.fc15 priority 32768 (32768 sysid 0)
Root           this switch for the CIST
Regional Root  this switch
Operational    hello time 2 , forward delay 15, max age 20, txholdcount 6
Configured     hello time 2 , forward delay 15, max age 20, max hops 20

Eth8/1 of MST0 is designated forwarding
Port info      port id 128.1025 priority 128 cost 20000
Designated root address 0018.bad7.fc15 priority 32768 cost 0
Design. regional root address 0018.bad7.fc15 priority 32768 cost 0
Designated bridge address 0018.bad7.fc15 priority 32768 port id 128.1025
Timers: message expires in 0 sec, forward delay 0, forward transitions 1
Bpdus sent 1379, received 3

Eth8/2 of MST0 is designated forwarding
Port info      port id 128.1026 priority 128 cost 20000
Designated root address 0018.bad7.fc15 priority 32768 cost 0
Design. regional root address 0018.bad7.fc15 priority 32768 cost 0
Designated bridge address 0018.bad7.fc15 priority 32768 port id 128.1026
Timers: message expires in 0 sec, forward delay 0, forward transitions 1
Bpdus sent 1380, received 2
```

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(August 2013), at 80.

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Examples

- This command displays interface data blocks for MST instance 3.

```
switch# show spanning-tree mst 3 detail

##### MST3    vlans mapped: 3
Bridge         address 0011.2233.4402 priority 32771 (32768 sysid 3)
Root           address 0011.2233.4401 priority 32771 (32768 sysid 3)

Ethernet1 of MST3 is root forwarding
Port info      port id 128.1 priority 128 cost 2000
Designated root address 0011.2233.4401 priority 32768 cost 0
Designated bridge address 0011.2233.4401 priority 32768 port id 128.1

Ethernet2 of MST3 is alternate discarding
Port info      port id 128.2 priority 128 cost 2000
Designated root address 0011.2233.4401 priority 32768 cost 0
Designated bridge address 0011.2233.4401 priority 32768 port id 128.2

Ethernet3 of MST3 is designated forwarding
Port info      port id 128.3 priority 128 cost 2000
Designated root address 0011.2233.4401 priority 32768 cost 2000
Designated bridge address 0011.2233.4402 priority 32768 port id 128.3
```

- This command displays interface table for all MST instances.

```
switch# show spanning-tree mst

##### MST0    vlans mapped: 1,4-4094
Bridge         address 0011.2233.4402 priority 32768 (32768 sysid 0)
Root           address 0011.2233.4401 priority 32768 (32768 sysid 0)
Regional Root  address 0011.2233.4401 priority 32768 (32768 sysid 0)

Interface      Role      State      Cost      Prio.Nbr Type
-----
Et1            root      forwarding 2000      128.1    P2p
Et2            alternate discarding 2000      128.2    P2p
Et3            designated forwarding 2000      128.3    P2p
Et4            designated forwarding 2000      128.4    P2p

##### MST2 vlans mapped: 2
Bridge         address 0011.2233.4402 priority 8194 (8192 sysid 2)
Root           this switch for MST2

Interface      Role      State      Cost      Prio.Nbr Type
-----
Et1            designated forwarding 2000      128.1    P2p
Et2            designated forwarding 2000      128.2    P2p
Et3            designated forwarding 2000      128.3    P2p
Et4            designated forwarding 2000      128.4    P2p

##### MST3 vlans mapped: 3
Bridge         address 0011.2233.4402 priority 32771 (32768 sysid 3)
Root           address 0011.2233.4401 priority 32771 (32768 sysid 3)

Interface      Role      State      Cost      Prio.Nbr Type
-----
Et1            root      forwarding 2000      128.1    P2p
Et2            alternate discarding 2000      128.2    P2p
Et3            designated forwarding 2000      128.3    P2p
Et4            designated forwarding 2000      128.4    P2p
```

Arista User Manual v. 4.12.4 (9/16/2013), at 889-890.
Arista User Manual v. 4.13.6F (4/14/2014), at 953-954.
Arista User Manual v. 4.13.7M (6/17/2014), at 971-972.
Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 990.
Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 991-992.
Arista User Manual v. 4.14.6M (1/19/2015), at 987-988.
Arista User Manual v. 4.15.0F (4/18/2015), at 995-996.
Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 987-988.

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>This example shows how to display information about the MST configuration:</p> <pre>switch)# show spanning-tree mst configuration</pre> <pre>Name: [mst-bldg-sj6/3] Revision: 1 Instances Configured: 3 Instance Vlans mapped ----- 0 1 2000 2-2000 4094 2001-4094 -----</pre> <p>This example shows how to display the MD5 digest included in the current MST configuration:</p> <pre>switch)# show spanning-tree mst configuration digest</pre> <pre>Name [mst-config] Revision 10 Instances configured 25 Digest 0x40D5ECA178C657835C83B8CB16723192 Pre-std Digest 0x27BF112A75B72781ED928D9RC5BB4251</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 81.</p>	<p>Examples</p> <ul style="list-style-type: none"> This command displays the MST region's VLAN-to-instance map. <pre>switch>show spanning-tree mst configuration</pre> <pre>Name [] Revision 0 Instances configured 3 Instance Vlans mapped ----- 0 1,4-4094 2 2 3 3 ----- switch></pre> <ul style="list-style-type: none"> This command displays the MST region's configuration digest. <pre>switch>show spanning-tree mst configuration digest</pre> <pre>Name [] Revision 0 Instances configured 1 Digest 0xAC36177F50283CD4B83821D8AB26DE62 switch></pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 891. Arista User Manual v. 4.13.6F (4/14/2014), at 955. Arista User Manual v. 4.13.7M (6/17/2014), at 973. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 991. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 993. Arista User Manual v. 4.14.6M (1/19/2015), at 989. Arista User Manual v. 4.15.0F (4/18/2015), at 997. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 989.</p>

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>Examples</p> <p>This example shows how to display information for the root bridge:</p> <pre>switch(config)# show spanning-tree root</pre> <table><thead><tr><th>MST Instance</th><th>Root ID</th><th>Cost</th><th>Time</th><th>Age</th><th>Dly</th><th>Root Port</th></tr></thead><tbody><tr><td>MST0000</td><td>32768 0018.bad7.fc15</td><td>0</td><td>2</td><td>20</td><td>15</td><td>This bridge is root</td></tr></tbody></table> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 82-83.</p>	MST Instance	Root ID	Cost	Time	Age	Dly	Root Port	MST0000	32768 0018.bad7.fc15	0	2	20	15	This bridge is root	<p>Examples</p> <ul style="list-style-type: none">This command displays a table of root bridge information. <pre>switch>show spanning-tree root</pre> <table><thead><tr><th>Instance</th><th>Priority</th><th>MAC addr</th><th>Root Cost</th><th>Hello Time</th><th>Max Age</th><th>Fwd Dly</th><th>Root Port</th></tr></thead><tbody><tr><td>MST0</td><td>32768</td><td>001c.7301.23de</td><td>0</td><td>2</td><td>20</td><td>15</td><td>Po937</td></tr><tr><td>MST101</td><td>32869</td><td>001c.7301.23de</td><td>3998</td><td>0</td><td>0</td><td>0</td><td>Po909</td></tr><tr><td>MST102</td><td>32870</td><td>001c.7301.23de</td><td>3998</td><td>0</td><td>0</td><td>0</td><td>Po911</td></tr></tbody></table> <pre>switch></pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 894. Arista User Manual v. 4.13.6F (4/14/2014), at 958. Arista User Manual v. 4.13.7M (6/17/2014), at 976. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 994. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 996. Arista User Manual v. 4.14.6M (1/19/2015), at 992. Arista User Manual v. 4.15.0F (4/18/2015), at 1000. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 992.</p>	Instance	Priority	MAC addr	Root Cost	Hello Time	Max Age	Fwd Dly	Root Port	MST0	32768	001c.7301.23de	0	2	20	15	Po937	MST101	32869	001c.7301.23de	3998	0	0	0	Po909	MST102	32870	001c.7301.23de	3998	0	0	0	Po911
	MST Instance	Root ID	Cost	Time	Age	Dly	Root Port																																									
MST0000	32768 0018.bad7.fc15	0	2	20	15	This bridge is root																																										
Instance	Priority	MAC addr	Root Cost	Hello Time	Max Age	Fwd Dly	Root Port																																									
MST0	32768	001c.7301.23de	0	2	20	15	Po937																																									
MST101	32869	001c.7301.23de	3998	0	0	0	Po909																																									
MST102	32870	001c.7301.23de	3998	0	0	0	Po911																																									
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>This example shows how to display information about the number of VLANs configured on the device:</p> <pre>switch# show vlan summary</pre> <pre>Number of existing VLANs : 9 Number of existing user VLANs : 9 Number of existing extended VLANs : 0</pre> <p>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 94.</p>	<p>Example</p> <ul style="list-style-type: none">This command displays the number of VLANs on the switch. <pre>switch>show vlan summary</pre> <pre>Number of existing VLANs : 18</pre> <pre>switch></pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 658. Arista User Manual v. 4.13.6F (4/14/2014), at 766. Arista User Manual v. 4.13.7M (6/17/2014), at 784. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 791. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 793. Arista User Manual v. 4.14.6M (1/19/2015), at 789. Arista User Manual v. 4.15.0F (4/18/2015), at 797. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 789.</p>																																														

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to display information about all private VLANs on the device:</div> <div><div>switch</div><div>(config)#</div><div>show vlan private-vlan</div></div> <div><table><tr><th>Primary</th><th>Secondary</th><th>Type</th><th>Ports</th></tr><tr><td>200</td><td>201</td><td>isolated</td><td>Eth2/26, Eth2/27</td></tr><tr><td>200</td><td>202</td><td>community</td><td>Eth2/26, Eth2/28</td></tr></table></div> <div>Cisco Nexus 7000 Series NX-OS Interfaces Command Reference (August 2013), at 100.</div>	Primary	Secondary	Type	Ports	200	201	isolated	Eth2/26, Eth2/27	200	202	community	Eth2/26, Eth2/28	<div>Example</div> <div><ul style="list-style-type: none">This command displays the private VLANs.</div> <div><div>switch></div><div>show vlan private-vlan</div></div> <div><table><tr><th>Primary</th><th>Secondary</th><th>Type</th><th>Ports</th></tr><tr><td>5</td><td>25</td><td>isolated</td><td></td></tr><tr><td>5</td><td>26</td><td>isolated</td><td></td></tr><tr><td>7</td><td>31</td><td>community</td><td></td></tr><tr><td>7</td><td>32</td><td>isolated</td><td></td></tr></table><div>switch></div></div> <div>Arista User Manual v. 4.12.4 (9/16/2013), at 657. Arista User Manual v. 4.13.6F (4/14/2014), at 765. Arista User Manual v. 4.13.7M (6/17/2014), at 783. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 790. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 792. Arista User Manual v. 4.14.6M (1/19/2015), at 788. Arista User Manual v. 4.15.0F (4/18/2015), at 796. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 788.</div>	Primary	Secondary	Type	Ports	5	25	isolated		5	26	isolated		7	31	community		7	32	isolated	
	Primary	Secondary	Type	Ports																														
200	201	isolated	Eth2/26, Eth2/27																															
200	202	community	Eth2/26, Eth2/28																															
Primary	Secondary	Type	Ports																															
5	25	isolated																																
5	26	isolated																																
7	31	community																																
7	32	isolated																																

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<p>BGP table version is 10, local router ID is 3.3.3.3 Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist Origin codes: i - IGP, e - EGP, ? - incomplete - multipath</p> <table><tr><th>Network</th><th>Next Hop</th><th>Metric</th><th>LocPrf</th><th>Weight</th><th>Path</th></tr><tr><td>* i200.0.1.100/32</td><td>201.0.25.1</td><td></td><td>100</td><td>100</td><td>6553601 i</td></tr><tr><td>*>e</td><td>201.0.13.1</td><td></td><td></td><td>0</td><td>6553601 i</td></tr><tr><td>* i200.0.2.100/32</td><td>201.0.25.1</td><td></td><td>100</td><td>100</td><td>6553601 i</td></tr><tr><td>*>e</td><td>201.0.13.1</td><td></td><td></td><td>0</td><td>6553601 i</td></tr><tr><td>*>l200.0.3.100/32</td><td>0.0.0.0</td><td></td><td>100</td><td>32768</td><td>i</td></tr></table> <p>Cisco Nexus 7000 Series NX-OS Unicast Routing Command Reference (August 2013), at 401.</p>	Network	Next Hop	Metric	LocPrf	Weight	Path	* i200.0.1.100/32	201.0.25.1		100	100	6553601 i	*>e	201.0.13.1			0	6553601 i	* i200.0.2.100/32	201.0.25.1		100	100	6553601 i	*>e	201.0.13.1			0	6553601 i	*>l200.0.3.100/32	0.0.0.0		100	32768	i	<p>switch>show ip bgp neighbors 10.14.4.4 advertised-routes regexp _64502_ BGP routing table information for VRF default Router identifier 172.24.78.191, local AS number 64498 Route status codes: s - suppressed, * - valid, > - active, E - ECMP head, e - ECMP S - Stale Origin codes: i - IGP, e - EGP, ? - incomplete AS Path Attributes: Or-ID - Originator ID, C-LST - Cluster List, LL Nexthop - Link Local Nexthop</p> <table><tr><th>Network</th><th>Next Hop</th><th>Metric</th><th>LocPref</th><th>Weight</th><th>Path</th></tr><tr><td>* > 10.99.31.0/24</td><td>10.88.202.1</td><td>333</td><td>100</td><td>-</td><td>(64502 64503) 99 i</td></tr><tr><td>* > 10.99.41.0/24</td><td>10.88.202.1</td><td>333</td><td>100</td><td>-</td><td>(64502 64503) 99 i</td></tr><tr><td>* > 10.99.99.0/24</td><td>10.88.202.1</td><td>333</td><td>100</td><td>-</td><td>(64502 64504) 99 i</td></tr></table> <p>Arista User Manual v. 4.13.6F (4/14/2014), at 1587. Arista User Manual v. 4.13.7M (6/17/2014), at 1605. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1637. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1651. Arista User Manual v. 4.14.6M (1/19/2015), at 1647. Arista User Manual v. 4.15.0F (4/18/2015), at 1655. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1649.</p>	Network	Next Hop	Metric	LocPref	Weight	Path	* > 10.99.31.0/24	10.88.202.1	333	100	-	(64502 64503) 99 i	* > 10.99.41.0/24	10.88.202.1	333	100	-	(64502 64503) 99 i	* > 10.99.99.0/24	10.88.202.1	333	100	-	(64502 64504) 99 i
	Network	Next Hop	Metric	LocPrf	Weight	Path																																																								
	* i200.0.1.100/32	201.0.25.1		100	100	6553601 i																																																								
*>e	201.0.13.1			0	6553601 i																																																									
* i200.0.2.100/32	201.0.25.1		100	100	6553601 i																																																									
*>e	201.0.13.1			0	6553601 i																																																									
*>l200.0.3.100/32	0.0.0.0		100	32768	i																																																									
Network	Next Hop	Metric	LocPref	Weight	Path																																																									
* > 10.99.31.0/24	10.88.202.1	333	100	-	(64502 64503) 99 i																																																									
* > 10.99.41.0/24	10.88.202.1	333	100	-	(64502 64503) 99 i																																																									
* > 10.99.99.0/24	10.88.202.1	333	100	-	(64502 64504) 99 i																																																									

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>Examples</div><div><p>This example shows how to display information about IGMP snooping queriers:</p><pre>switch(config)# show ip igmp snooping querier</pre><table><thead><tr><th>Vlan</th><th>IP Address</th><th>Version</th><th>Port</th></tr></thead><tbody><tr><td>1</td><td>172.20.50.11</td><td>v3</td><td>fa2/1</td></tr><tr><td>2</td><td>172.20.40.20</td><td>v2</td><td>Router</td></tr></tbody></table><pre>switch(config)#</pre></div></div> <div><p>Cisco Nexus 7000 Series NX-OS Multicast Routing Command Reference (August 2013), at 50.</p></div>	Vlan	IP Address	Version	Port	1	172.20.50.11	v3	fa2/1	2	172.20.40.20	v2	Router	<div><div>Example</div><div><ul style="list-style-type: none">This command displays the querier IP address, version, and port servicing each VLAN.<pre>switch>show ip igmp snooping querier</pre><table><thead><tr><th>Vlan</th><th>IP Address</th><th>Version</th><th>Port</th></tr></thead><tbody><tr><td>1</td><td>172.17.0.37</td><td>v2</td><td>Po1</td></tr><tr><td>20</td><td>172.17.20.1</td><td>v2</td><td>Po1</td></tr><tr><td>26</td><td>172.17.26.1</td><td>v2</td><td>Cpu</td></tr><tr><td>2028</td><td>172.17.255.29</td><td>v2</td><td>Po1</td></tr></tbody></table><pre>switch></pre></div></div> <div><p>Arista User Manual v. 4.12.4 (9/16/2013), at 1560. Arista User Manual v. 4.13.6F (4/14/2014), at 1790. Arista User Manual v. 4.13.7M (6/17/2014), at 1755. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 1860. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1874. Arista User Manual v. 4.14.6M (1/19/2015), at 1870. Arista User Manual v. 4.15.0F (4/18/2015), at 1878. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1872.</p></div>	Vlan	IP Address	Version	Port	1	172.17.0.37	v2	Po1	20	172.17.20.1	v2	Po1	26	172.17.26.1	v2	Cpu	2028	172.17.255.29	v2	Po1
	Vlan	IP Address	Version	Port																														
1	172.20.50.11	v3	fa2/1																															
2	172.20.40.20	v2	Router																															
Vlan	IP Address	Version	Port																															
1	172.17.0.37	v2	Po1																															
20	172.17.20.1	v2	Po1																															
26	172.17.26.1	v2	Cpu																															
2028	172.17.255.29	v2	Po1																															

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to use the show port-security command to view the status of the port security feature on a device:</div> <div>switch# show port-security</div> <div>Total Secured Mac Addresses in System (excluding one mac per port) : 0 Max Addresses limit in System (excluding one mac per port) : 8192</div> <table><thead><tr><th>Secure Port</th><th>MaxSecureAddr (Count)</th><th>CurrentAddr (Count)</th><th>SecurityViolation (Count)</th><th>Security Action</th></tr></thead><tbody><tr><td>Ethernet1/4</td><td>5</td><td>1</td><td>0</td><td>Shutdown</td></tr></tbody></table> <div>switch#</div> <div>Cisco Nexus 7000 Series NX-OS Security Command Reference (August 2013), at SEC-661.</div>	Secure Port	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action	Ethernet1/4	5	1	0	Shutdown	<div>Example</div> <div><ul style="list-style-type: none">These commands enable MAC security on Ethernet interface 7, set the maximum number of assigned MAC addresses to 2, assigns two static MAC addresses to the interface, and clears the dynamic MAC addresses for the interface.</div> <div>switch(config)#interface ethernet 7 switch(config-if-Et7)#switchport port-security switch(config-if-Et7)#switchport port-security maximum 2 switch(config-if-Et7)#exit switch(config)#mac address-table static 0034.24c2.8f11 vlan 10 interface ethernet 7 switch(config)#mac address-table static 4464.842d.17ce vlan 10 interface ethernet 7 switch(config)#clear mac address-table dynamic interface ethernet 7 switch(config)#show port-security</div> <table><thead><tr><th>Secure Port</th><th>MaxSecureAddr (Count)</th><th>CurrentAddr (Count)</th><th>SecurityViolation (Count)</th><th>Security Action</th></tr></thead><tbody><tr><td>Et7</td><td>2</td><td>2</td><td>0</td><td>Shutdown</td></tr></tbody></table> <div>Total Addresses in System: 1 switch(config)#show port-security address</div> <div>Secure Mac Address Table</div> <table><thead><tr><th>Vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr></thead><tbody><tr><td>10</td><td>0034.24c2.8f11</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr><tr><td>10</td><td>4464.842d.17ce</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr></tbody></table> <div>Total Mac Addresses for this criterion: 2 switch(config)#</div>	Secure Port	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action	Et7	2	2	0	Shutdown	Vlan	Mac Address	Type	Ports	Remaining Age (mins)	10	0034.24c2.8f11	SecureConfigured	Et7	N/A	10	4464.842d.17ce	SecureConfigured	Et7	N/A
	Secure Port	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action																																
Ethernet1/4	5	1	0	Shutdown																																	
Secure Port	MaxSecureAddr (Count)	CurrentAddr (Count)	SecurityViolation (Count)	Security Action																																	
Et7	2	2	0	Shutdown																																	
Vlan	Mac Address	Type	Ports	Remaining Age (mins)																																	
10	0034.24c2.8f11	SecureConfigured	Et7	N/A																																	
10	4464.842d.17ce	SecureConfigured	Et7	N/A																																	

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div>Examples</div> <div>This example shows how to use the <code>show port-security address</code> command to view information about all MAC addresses secured by port security:</div> <div>switch# show port-security address</div> <div>Total Secured Mac Addresses in System (excluding one mac per port) : 0 Max Addresses limit in System (excluding one mac per port) : 8192</div> <div>-----</div> <div>Secure Mac Address Table</div> <div><table><tr><th>Vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr><tr><td>1</td><td>0054.AAB3.770F</td><td>STATIC</td><td>port-channel1</td><td>0</td></tr><tr><td>1</td><td>00EE.378A.ABCE</td><td>STATIC</td><td>Ethernet1/4</td><td>0</td></tr></table></div> <div>-----</div> <div>switch#</div> <div>This example shows how to use the <code>show port-security address</code> command to view the MAC addresses secured by the port security feature on the Ethernet 1/4 interface:</div> <div>switch# show port-security address interface ethernet 1/4</div> <div>Secure Mac Address Table</div> <div><table><tr><th>Vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr><tr><td>1</td><td>00EE.378A.ABCE</td><td>STATIC</td><td>Ethernet1/4</td><td>0</td></tr></table></div> <div>-----</div> <div>switch#</div> <div>Cisco Nexus 7000 Series NX-OS Security Command Reference (August 2013), at SEC-664.</div>	Vlan	Mac Address	Type	Ports	Remaining Age (mins)	1	0054.AAB3.770F	STATIC	port-channel1	0	1	00EE.378A.ABCE	STATIC	Ethernet1/4	0	Vlan	Mac Address	Type	Ports	Remaining Age (mins)	1	00EE.378A.ABCE	STATIC	Ethernet1/4	0	<div>Example</div> <div><ul style="list-style-type: none">This command displays MAC addresses assigned to port-security protected interfaces.</div> <div>switch>show port-security address</div> <div>Secure Mac Address Table</div> <div><table><tr><th>Vlan</th><th>Mac Address</th><th>Type</th><th>Ports</th><th>Remaining Age (mins)</th></tr><tr><td>10</td><td>164f.29ae.4e14</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr><tr><td>10</td><td>164f.29ae.4f11</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr><tr><td>10</td><td>164f.320a.3a11</td><td>SecureConfigured</td><td>Et7</td><td>N/A</td></tr></table></div> <div>-----</div> <div>Total Mac Addresses for this criterion: 3</div> <div>switch></div> <div>Arista User Manual v. 4.12.4 (9/16/2013), at 581. Arista User Manual v. 4.13.6F (4/14/2014), at 686. Arista User Manual v. 4.13.7M (6/17/2014), at 690. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 698. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 700. Arista User Manual v. 4.14.6M (1/19/2015), at 696. Arista User Manual v. 4.15.0F (4/18/2015), at 704. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 696.</div>	Vlan	Mac Address	Type	Ports	Remaining Age (mins)	10	164f.29ae.4e14	SecureConfigured	Et7	N/A	10	164f.29ae.4f11	SecureConfigured	Et7	N/A	10	164f.320a.3a11	SecureConfigured	Et7	N/A
	Vlan	Mac Address	Type	Ports	Remaining Age (mins)																																										
1	0054.AAB3.770F	STATIC	port-channel1	0																																											
1	00EE.378A.ABCE	STATIC	Ethernet1/4	0																																											
Vlan	Mac Address	Type	Ports	Remaining Age (mins)																																											
1	00EE.378A.ABCE	STATIC	Ethernet1/4	0																																											
Vlan	Mac Address	Type	Ports	Remaining Age (mins)																																											
10	164f.29ae.4e14	SecureConfigured	Et7	N/A																																											
10	164f.29ae.4f11	SecureConfigured	Et7	N/A																																											
10	164f.320a.3a11	SecureConfigured	Et7	N/A																																											

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<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display the EEE status on an interface:</p> <pre>switch# show interface ethernet2/6 Ethernet2/6 is down (Link not connected) admin state is up, Dedicated Interface Hardware: 10000 Ethernet, address: 0022.5579.de41 (bia 001b.54c1.af5d) MTU 1500 bytes, BW 10000000 Kbit, DLY 10 usec reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, medium is broadcast auto-duplex, auto-speed, media type is 10G Beacon is turned off Auto-Negotiation is turned off Input flow-control is off, output flow-control is off Auto-mdix is turned off Rate mode is shared Switchport monitor is off EtherType is 0x8100 EEE (efficient-ethernet) : n/a Last link flapped never Last clearing of "show interface" counters never 0 interface resets 30 seconds input rate 0 bits/sec, 0 packets/sec 30 seconds output rate 0 bits/sec, 0 packets/sec Load-Interval #2: 5 minute (300 seconds)</pre> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 514.</p>	<p>Example</p> <ul style="list-style-type: none"> This command assigns the MAC address of 001c.2804.17e1 to Ethernet interface 7, then displays interface parameters, including the assigned address. <pre>switch(config)#interface ethernet 7 switch(config-if-Et7)#mac-address 001c.2804.17e1 switch(config-if-Et7)#show interface ethernet 7 Ethernet3 is up, line protocol is up (connected) Hardware is Ethernet, address is 001c.2804.17e1 (bia 001c.7312.02e2) Description: b.e45 MTU 9212 bytes, BW 10000000 Kbit Full-duplex, 10Gb/s, auto negotiation: off Last clearing of "show interface" counters never 5 seconds input rate 7.84 kbps (0.0% with framing), 10 packets/sec 5 seconds output rate 270 kbps (0.0% with framing), 24 packets/sec 1363799 packets input, 222736140 bytes Received 0 broadcasts, 290904 multicast 0 runts, 0 giants 0 input errors, 0 CRC, 0 alignment, 0 symbol 0 PAUSE input 2264927 packets output, 2348747214 bytes Sent 0 broadcasts, 28573 multicast 0 output errors, 0 collisions 0 late collision, 0 deferred 0 PAUSE output switch(config-if-Et7)#</pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 390. Arista User Manual v. 4.13.6F (4/14/2014), at 429. Arista User Manual v. 4.13.7M (6/17/2014), at 429. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 437. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 439. Arista User Manual v. 4.14.6M (1/19/2015), at 435. Arista User Manual v. 4.15.0F (4/18/2015), at 443. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 435.</p>

Copyright Registration Information	Cisco	Arista				
<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>show ptp clock</div><div>To display the Precision Time Protocol (PTP) clock information, use the show ptp clock command.</div><div>show ptp clock</div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>None</div></div><div><div>Command Modes</div><div>Any command mode</div></div><div><div>Supported User Roles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to display the PTP clock information:</div><div>switch# show ptp clock PTP Device Type: Boundary clock Clock Identity: 0:18:ba:ff:ff:d8: e:17 Clock Domain: 0 Number of PTP ports: 2 Priority1: 255 Priority2: 255 Clock Quality: Class: 248 Accuracy: 254 Offset (log variance): 65535 Offset From Master: 0 Mean Path Delay: 0 Steps removed: 1 Local clock time: Sun Jan 15 20:57:29 2011</div></div></div> <div>Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 601.</div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>Show PTP Clock and Offset</div><div>To display the Precision Time Protocol (PTP) local clock and offset, use the show ptp clock command.</div><div><ul style="list-style-type: none">The show ptp clock command displays the Precision Time Protocol (PTP) local clock and offset.</div><div>switch# show ptp clock PTP Mode: Boundary Clock Clock Identity: 0x00:1c:73:ff:ff:1e:83:24 Clock Domain: 1 Number of PTP ports: 24 Priority1: 128 Priority2: 128 Clock Quality: Class: 248 Accuracy: 0x30 Offset Scaled Log Variance: 0xffff Offset From Master: 0 Mean Path Delay: 0 Steps Removed: 0 switch#</div><div>Arista User Manual v. 4.12.4 (9/16/2013), at 233. Arista User Manual v. 4.13.6F (4/14/2014), at 267. Arista User Manual v. 4.13.7M (6/17/2014), at 267. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 275. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 277. Arista User Manual v. 4.14.6M (1/19/2015), at 273. Arista User Manual v. 4.15.0F (4/18/2015), at 257. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 257.</div></div>
	Release	Modification				
5.2(1)	This command was introduced.					

Copyright Registration Information	Cisco	Arista				
<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>show ptp parent</div><div>To display information about the parent and grand master of the Precision Time Protocol (PTP) clock, use the show ptp parent command.</div><div>show ptp parent</div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>None</div></div><div><div>Command Modes</div><div>Any command mode</div></div><div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to display information about the parent and grand master of the PTP clock:</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0:18:ba:ff:ff:d8: e:16 Parent Port Number: 1546 Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0:18:ba:ff:ff:d8: e:16 Grandmaster Clock Quality: Class: 248 Accuracy: 254 Offset [log variance]: 65535 Priority1: 255 Priority2: 255</div></div></div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>Show PTP Parent Information</div><div>To display information about the parent and grand master of the Precision Time Protocol (PTP) clock, use the show ptp parent command.</div><div><ul style="list-style-type: none">The show ptp parent command displays information about the parent and grand master of the Precision Time Protocol (PTP) clock.</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Parent Port Number: 0 Parent IP Address: N/A Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Grandmaster Clock Quality: Class: 248 Accuracy: 0x30 Offset Scaled Log Variance: 0xffff Priority1: 128 Priority2: 128 switch#</div><div><div>Arista User Manual v. 4.12.4 (9/16/2013), at 233-234.</div><div>Arista User Manual v. 4.13.6F (4/14/2014), at 267.</div><div>Arista User Manual v. 4.13.7M (6/17/2014), at 267.</div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 275.</div><div>Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 277.</div><div>Arista User Manual v. 4.14.6M (1/19/2015), at 273.</div> <div>Arista User Manual v. 4.15.0F (4/18/2015), at 257.</div><div>Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 257.</div></div></div>
	Release	Modification				
	5.2(1)	This command was introduced.				

Copyright Registration Information	Cisco	Arista				
<div>Cisco NX-OS 6.2</div> <div>Effective date of registration: 11/13/2014</div>	<div><div>show ptp parent</div><div>To display information about the parent and grand master of the Precision Time Protocol (PTP) clock, use the show ptp parent command.</div><div>show ptp parent</div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>None</div></div><div><div>Command Modes</div><div>Any command mode</div></div><div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to display information about the parent and grand master of the PTP clock:</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0:18:ba:ff:ff:d8: e:16 Parent Port Number: 1546 Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0:18:ba:ff:ff:d8: e:16 Grandmaster Clock Quality: Class: 248 Accuracy: 254 Offset (log variance): 65535 Priority1: 255 Priority2: 255</div></div></div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>show ptp parent</div><div>The show ptp parent command displays information about the parent and grand master of the Precision Time Protocol (PTP) clock.</div><div>Platform Arad, FM6000 Command Mode Privileged EXEC</div><div><div>Command Syntax</div><div>show ptp parent</div></div><div><div>Examples</div><div><div>This command shows how to display information about the parent and master of the PTP clock.</div><div>switch# show ptp parent Parent Clock: Parent Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Parent Port Number: 0 Parent IP Address: N/A Observed Parent Offset (log variance): N/A Observed Parent Clock Phase Change Rate: N/A Grandmaster Clock: Grandmaster Clock Identity: 0x00:1c:73:ff:ff:00:72:40 Grandmaster Clock Quality: Class: 248 Accuracy: 0x30 Offset Scaled Log Variance: 0xffff Priority1: 128 Priority2: 128 switch#</div></div></div></div> <div><div>Arista User Manual v. 4.12.4 (9/16/2013), at 301.</div><div>Arista User Manual v. 4.13.6F (4/14/2014), at 344.</div><div>Arista User Manual v. 4.13.7M (6/17/2014), at 344.</div><div>Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 352.</div><div>Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 354.</div><div>Arista User Manual v. 4.14.6M (1/19/2015), at 350.</div><div>Arista User Manual v. 4.15.0F (4/18/2015), at 334.</div><div>Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 334.</div></div>
	Release	Modification				
5.2(1)	This command was introduced.					
<div>Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 607.</div>						

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Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>show ptp time-property</div><div>To display the Precision Time Protocol (PTP) clock properties, use the show ptp time-property command.</div><div>show ptp time-property</div></div> <div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div> <div><div>Defaults</div><div>None</div></div> <div><div>Command Modes</div><div>Any command mode</div></div> <div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div> <div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div> <div><div>Usage Guidelines</div><div>This command does not require a license.</div></div> <div><div>Examples</div><div>This example shows how to display the PTP clock properties: switch# show ptp time-property PTP CLOCK TIME PROPERTY: Current UTC Offset valid: 0 Current UTC Offset: 33 Leap59: 0 Leap61: 0 Time Traceable: 0 Frequency Traceable: 0 PTP Timescale: 0 Time Source: 0xA0 (internal Oscillator)</div></div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>Show PTP Clock Properties</div><div>To display the Precision Time Protocol (PTP) clock properties, use the show ptp time-property command.</div><div><div>The show ptp time-property command displays the Precision Time Protocol (PTP) clock properties. switch# show ptp time-property Current UTC offset valid: False Current UTC offset: 0 Leap 59: False Leap 61: False Time Traceable: False Frequency Traceable: False PTP Timescale: False Time Source: 0x0 switch#</div></div></div> <div>Arista User Manual v. 4.12.4 (9/16/2013), at 234. Arista User Manual v. 4.13.6F (4/14/2014), at 267-268. Arista User Manual v. 4.13.7M (6/17/2014), at 267-268. Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 275-76. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 277. Arista User Manual v. 4.14.6M (1/19/2015), at 273. Arista User Manual v. 4.15.0F (4/18/2015), at 257. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 257.</div>
	Release	Modification				
5.2(1)	This command was introduced.					

Copyright Registration Information	Cisco	Arista				
Cisco NX-OS 6.2 Effective date of registration: 11/13/2014	<div><div>show ptp time-property</div><div>To display the Precision Time Protocol (PTP) clock properties, use the show ptp time-property command.</div><div>show ptp time-property</div></div> <div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div> <div><div>Defaults</div><div>None</div></div> <div><div>Command Modes</div><div>Any command mode</div></div> <div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div> <div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>5.2(1)</td><td>This command was introduced.</td></tr></table></div> <div><div>Usage Guidelines</div><div>This command does not require a license.</div></div> <div><div>Examples</div><div>This example shows how to display the PTP clock properties:</div><div>switch# show ptp time-property PTP CLOCK TIME PROPERTY: Current UTC Offset valid: 0 Current UTC Offset: 33 Leap59: 0 Leap61: 0 Time Traceable: 0 Frequency Traceable: 0 PTP Timescale: 0 Time Source: 0xA0 (internal Oscillator)</div></div>	Release	Modification	5.2(1)	This command was introduced.	<div><div>show ptp time-property</div><div>The show ptp time-property command displays the Precision Time Protocol (PTP) clock properties.</div><div>Platform Arad, FM6000 Command Mode Privileged EXEC</div><div><div>Command Syntax</div><div>show ptp time-property</div></div><div><div>Examples</div><div><ul style="list-style-type: none">This command shows the PTP clock properties.<div>switch# show ptp time-property Current UTC offset valid: False Current UTC offset: 0 Leap 59: False Leap 61: False Time Traceable: False Frequency Traceable: False PTP Timescale: False Time Source: 0x0 switch#</div></div></div></div> <div>Arista User Manual v. 4.12.4 (9/16/2013), at 303. Arista User Manual v. 4.13.6F (4/14/2014), at 346. Arista User Manual v. 4.13.7M (6/17/2014), at 346. Arista User Manual v. 4.14.3F – Rev. 2 (10/2/2014), at 354. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 356. Arista User Manual v. 4.14.6M (1/19/2015), at 352. Arista User Manual v. 4.15.0F (4/18/2015), at 336. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 336.</div>
	Release	Modification				
5.2(1)	This command was introduced.					

Copyright Registration Information	Cisco	Arista
<p>Cisco NX-OS 6.2</p> <p>Effective date of registration: 11/13/2014</p>	<p>Examples</p> <p>This example shows how to display the SNMP information:</p> <pre>switch(config)# show snmp sys contact: sys location: anyplace, Anywhere 0 SNMP packets input 0 Bad SNMP versions 0 Unknown community name 0 illegal operation for community name supplied 0 Encoding errors 0 Number of requested variables 0 Number of altered variables 0 Get-request PDUs 0 Get-next PDUs 0 Set-request PDUs 0 SNMP packets output 0 Too big errors 0 No such name errors 0 Bad values errors 0 General errors</pre> <p>Cisco Nexus 7000 Series NX-OS System Management Command Reference (August 2013), at 634.</p>	<p>Example</p> <ul style="list-style-type: none"> This command configures xyz-1234 as the chassis-ID string, then displays the result. <pre>switch(config)#snmp-server chassis-id xyz-1234 switch(config)#show snmp Chassis: xyz-1234 <---chassis ID 8 SNMP packets input 0 Bad SNMP version errors 0 Unknown community name 0 Illegal operation for community name supplied 0 Encoding errors 8 Number of requested variables 0 Number of altered variables 4 Get-request PDUs 4 Get-next PDUs 0 Set-request PDUs 21 SNMP packets output 0 Too big errors 0 No such name errors 0 Bad value errors 0 General errors 8 Response PDUs 0 Trap PDUs SNMP logging: enabled Logging to taccon.162 SNMP agent enabled switch(config)#</pre> <p>Arista User Manual v. 4.12.4 (9/16/2013), at 1705-1706. Arista User Manual v. 4.13.6F (4/14/2014), at 1895-1896. Arista User Manual v. 4.13.7M (6/17/2014), at 1923-1924. Arista User Manual v. 4.14.3F (Rev. 2) (10/2/2014), at 1967-68 Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1981-1982. Arista User Manual v. 4.14.6M (1/19/2015), at 1977-1978. Arista User Manual v. 4.15.0F (4/18/2015), at 1985-1986 Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1979-1980.</p>

Copyright Registration Information	Cisco	Arista								
Cisco NX-OS 5.0 Effective date of registration: 11/13/2014	<div><div>show snmp engineID</div><div>To display the Simple Network Management Protocol (SNMP) engine ID, use the show snmp engineID command.</div><div>show snmp engineID</div><div><div>Syntax Description</div><div>This command has no arguments or keywords.</div></div><div><div>Defaults</div><div>None</div></div><div><div>Command Modes</div><div>Any command mode</div></div><div><div>SupportedUserRoles</div><div>network-admin network-operator vdc-admin vdc-operator</div></div><div><div>Command History</div><table><tr><th>Release</th><th>Modification</th></tr><tr><td>4.0(1)</td><td>This command was introduced.</td></tr></table></div><div><div>Usage Guidelines</div><div>This command does not require a license.</div></div><div><div>Examples</div><div>This example shows how to display the SNMP engine ID:</div><div>switch(config)# show snmp engineID Local SNMP engineID: [Hex] 80000009030005300A0B0C [Dec] 128:000:000:009:003:000:005:048:010:011:012</div></div><div><div>Related Commands</div><table><tr><th>Command</th><th>Description</th></tr><tr><td>snmp-server user</td><td>Configures SNMP target notification users.</td></tr></table></div></div>	Release	Modification	4.0(1)	This command was introduced.	Command	Description	snmp-server user	Configures SNMP target notification users.	<div><div>show snmp engineID</div><div>The show snmp engineID command displays the identification of the local Simple Network Management Protocol (SNMP) engine and of all remote engines that are configured on the switch.</div><div>Platform all Command Mode EXEC</div><div><div>Command Syntax</div><div>show snmp engineID</div></div><div><div>Example</div><div><ul style="list-style-type: none">This command displays the ID of the local SNMP engine.</div><div>switch> show snmp engineid Local SNMP EngineID: f5717f001c730436d700 switch></div></div><div>Arista User Manual v. 4.11.1 – Rev 2 (1/22/2013), at 1363. Arista User Manual v. 4.11.2.1 (3/1/2013), at 1443. Arista User Manual v. 4.12.4 (9/16/2013), at 1716. Arista User Manual v. 4.13.6F (4/14/2014), at 1906. Arista User Manual v. 4.13.7M (6/17/2014), at 1934. Arista User Manual v. 4.14.3F – Rev. 2 (October 2, 2014), at 1978. Arista User Manual v. 4.14.5F – Rev. 2 (12/22/2014), at 1991. Arista User Manual v. 4.14.6M (1/19/2015), at 1987. Arista User Manual v. 4.15.0F (4/18/2015), at 1995. Arista User Manual v. 4.15.0F – Rev. 2 (4/27/2015), at 1989.</div></div>
	Release	Modification								
4.0(1)	This command was introduced.									
Command	Description									
snmp-server user	Configures SNMP target notification users.									

Exhibit Copying-4

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
User EXEC	router>	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	EXEC	switch>	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Privileged EXEC	router#	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	Privileged EXEC	switch#	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Global Configuration	router(config)#	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	Global Configuration	switch(config)#	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.517, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Interface Configuration	router(config-if)#	IOS 11.0 through IOS 15.4; IOS XE 2.1 through IOS XE 3.5; IOS XR 3.0 through IOS XR 5.2	Interface Configuration	switch(config-if)#	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
User EXEC	switch>	NX-OS 4.0	EXEC	switch>	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Privileged EXEC	switch#	NX-OS 4.0 through NX-OS 5.2	Privileged EXEC	switch#	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
EXEC	switch#	NX-OS 5.0 through NX-OS 6.2	Privileged EXEC	switch#	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Global Configuration	switch(config)#	NX-OS 4.0 through NX-OS 6.2	Global Configuration	switch(config)#	EOS v. 4.0.1 EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-4 -- Evidence of Mode/Prompt Copying

Cisco Command Mode	Cisco Prompt	Copyrighted Work(s) in Which Cisco's Command Mode and Prompt Appears	Identical or Similar Arista Command Mode	Identical or Similar Arista Prompt	Work(s) in Which Command Mode and Prompt Appears	Exemplary Documentary Evidence Of Arista's Use of Modes And Prompts
Interface Configuration	switch(config-if)#	NX-OS 4.0 through NX-OS 6.2	Interface Configuration	switch(config-if)#	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	CSI-CLI-00007473 CSI-CLI-00007244 CSI-CLI-00006858 CSI-CLI-00007841 CSI-CLI-00010517 CSI-CLI-00008985 CSI-CLI-00014141 CSI-CLI-00011973 CSI-CLI-00018146 CSI-CLI-00000084 CSI-CLI-00004616 CSI-CLI-00020575 CSI-CLI-00002332 CSI-CLI-00016001

Exhibit Copying-5





Filed Under Seal

Exhibit Copying-5 – Evidence of Hierarchy Copying

“aaa” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ¹	<div>██████████</div> <div>██████████</div> <div>██████████████████</div> <div>██████████</div> <div>██████████</div>
aaa accounting	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	aaa accounting	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	<div>██████████</div> <div>██████████</div>
aaa accounting dot1x	IOS XE 3.5; NX-OS 4.0 through 6.2	aaa accounting dot1x	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	<div>██████████</div> <div>██████████</div>

¹ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears¹	
aaa authentication login	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	aaa authentication login	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
aaa authorization config-commands	Cisco IOS 11.2 through 15.4; IOS XE 3.5	aaa authorization config-commands	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
aaa authorization console	Cisco IOS 12.0 through 15.4; IOS XE 3.5	aaa authorization console	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ¹	[REDACTED]
aaa group server radius	Cisco IOS 12.0 through 15.4; IOS XR 3.2 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	aaa group server radius	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
aaa group server tacacs+	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	aaa group server tacacs+	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

“bgp” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears²	[REDACTED]
bgp client-to-client reflection	Cisco IOS 11.1 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	bgp client-to-client reflection	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
bgp cluster-id	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5	bgp cluster-id	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
bgp confederation identifier	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5	bgp confederation identifier	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

² At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.




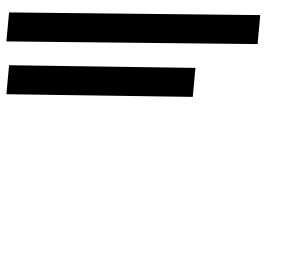

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ²	
bgp confederation peers	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5; NX-OS 4.0 through 6.2	bgp confederation peers	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
bgp listen limit	Cisco IOS 12.2 through 15.4; ; IOS XE 3.5	bgp listen limit	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
bgp log-neighbor-changes	Cisco IOS 11.1 through 15.4; IOS XR 3.0 through 3.5; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	bgp log-neighbor-changes	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
bgp redistribute-internal	Cisco IOS 12.1 through 15.4; IOS XR 3.0 through 5.2; ; IOS XE 3.5	bgp redistribute-internal (BGP)	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

“clear” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears³	[REDACTED]
clear arp-cache	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	clear arp-cache	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear counters	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	clear counters	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear ip arp	NX-OS 4.0 through 6.2	clear ip arp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

³ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ³	[REDACTED]
clear ip bgp	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	clear ip bgp	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear ip igmp group	Cisco IOS 11.0 through 15.4; IOS XE 3.5	clear ip igmp group	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear ip mroute	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	clear ip mroute	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear ip msdp sa-cache	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	clear ip msdp sa-cache	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]


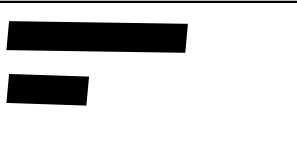
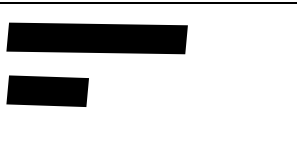
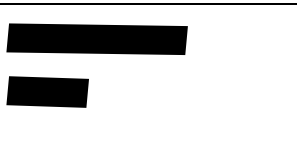
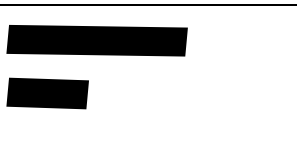
Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears³	
clear ip nat translation	Cisco IOS 11.2 through 15.4; IOS XE 3.5	clear ip nat translation	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
clear ip ospf neighbor	Cisco IOS 11.1 through 15.4; NX-OS 4.0 through 6.2	clear ip ospf neighbor	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
clear ipv6 neighbors	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	clear ipv6 neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
clear ipv6 ospf force-spf	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	clear ipv6 ospf force-spf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears³	[REDACTED]
clear lldp counters	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5	clear lldp counters	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear lldp table	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5	clear lldp table	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear mac-address-table dynamic	Cisco IOS 12.2 through 15.0; NX-OS 4.0 through 6.2	clear mac address-table dynamic	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
clear spanning-tree counters	NX-OS 4.0 through 6.2	clear spanning-tree counters	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]





“dot1x” command hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁴	[REDACTED]
dot1x max-reauth-req	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x max-reauth-req	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
dot1x pae authenticator	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2	dot1x pae authenticator	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
dot1x port-control	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x port-control	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
dot1x reauthentication	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x reauthentication	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]






⁴ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁴	
dot1x system-auth-control	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x system-auth-control	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
dot1x timeout quiet-period	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x timeout quiet-period	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
dot1x timeout reauth-period	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x timeout reauth-period	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
dot1x timeout tx-period	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	dot1x timeout tx-period	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

“ip” hierarchy

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁵	
ip access-group	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip access-group	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip access-list	Cisco IOS 11.2 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip access-list	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip access-list standard	Cisco IOS 11.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	ip access-list standard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	






⁵ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip address	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip as-path access-list	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip as-path access-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip community-list expanded	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip community-list expanded	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip community-list standard	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip community-list standard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip dhcp smart-relay	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.2 through 6.2	ip dhcp smart-relay	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip dhcp smart-relay global	IOS XE 3.5; NX-OS 5.2 through 6.2	ip dhcp smart-relay global	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip dhcp snooping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip dhcp snooping	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip dhcp snooping information option	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip dhcp snooping information option	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip dhcp snooping vlan	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip dhcp snooping vlan	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip domain lookup	Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip domain lookup	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip domain name	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip domain-name	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip extcommunity-list expanded	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2	ip extcommunity-list expanded	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip extcommunity-list standard	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 5.0 through 6.2	ip extcommunity-list standard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip helper-address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ip helper-address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip host	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip host	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip http client source-interface	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ip http client source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip icmp redirect	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ip icmp redirect	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip igmp last-member-query-count	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp last-member-query-count	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip igmp last-member-query-interval	Cisco IOS 12.1 through 15.4; IOS XE 3.5	ip igmp last-member-query-interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip igmp query-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp query-interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip igmp query-max-response-time	Cisco IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp query-max-response-time	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip igmp snooping	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp snooping	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip igmp snooping querier	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp snooping querier	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip igmp snooping vlan	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip igmp snooping vlan immediate-leave	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan immediate-leave	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip igmp snooping vlan mrouter	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan mrouter	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip igmp snooping vlan static	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip igmp snooping vlan static	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip igmp startup-query- interval	NX-OS 4.0 through 6.2	ip igmp startup-query- interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip igmp startup-query-count	NX-OS 4.0 through 6.2	ip igmp startup-query-count	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip igmp static-group	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip igmp static-group	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip igmp version	Cisco IOS 11.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip igmp version	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip load-sharing	Cisco IOS 11.2 through 15.4; IOS XE 2.1 through 3.5	ip load-sharing	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip local-proxy-arp	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip local-proxy-arp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	






Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip msdp cache-sa-state	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip msdp cache-sa-state	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip msdp default-peer	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip msdp default-peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip msdp description	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp description	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip msdp group-limit	NX-OS 4.0 through 6.2	ip msdp group-limit	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip msdp keepalive	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp keepalive	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip msdp mesh-group	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp mesh-group	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip msdp originator-id	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp originator-id	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip msdp peer	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip msdp sa-filter in	Cisco IOS 12.0 through 15.4; IOS XE 3.5	ip msdp sa-filter in	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip msdp sa-filter out	Cisco IOS 12.0 through 15.4; IOS XE 3.5;	ip msdp sa-filter out	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip msdp sa-limit	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp sa-limit	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip msdp shutdown	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip msdp shutdown	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip msdp timer	Cisco IOS 12.1 through 15.4; IOS XE 3.5	ip msdp timer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip multicast boundary	Cisco IOS 11.1 through 15.4; IOS XE 3.5	ip multicast boundary	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip multicast-routing	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ip multicast-routing	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip name-server	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip name-server	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip nat pool	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip nat pool	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip nat translation tcp-timeout	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip nat translation tcp-timeout	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip nat translation udp-timeout	Cisco IOS 11.2 through 15.4; IOS XE 3.5	ip nat translation udp- timeout	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf authentication	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf authentication	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf authentication-key	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf authentication-key	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip ospf bfd	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ip ospf bfd	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf cost	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf cost	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf dead-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf dead-interval	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf hello-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf hello-interval	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip ospf message-digest-key	Cisco IOS 11.0 through 15.4; IOS XR 3.0; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf message-digest-key	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf name-lookup	Cisco IOS 11.0 through 15.4; IOS XE 3.5	ip ospf name-lookup	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf network	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf network	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip ospf priority	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf priority	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip ospf retransmit-interval	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf retransmit-interval	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip ospf shutdown	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf shutdown	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip ospf transmit-delay	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip ospf transmit-delay	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim anycast-rp	NX-OS 4.0 through 6.2	ip pim anycast-rp	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip pim bfd	Cisco IOS 15.4; NX-OS 5.0 through 6.2	ip pim bfd	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim bfd-instance	NX-OS 5.0 through 6.2	ip pim bfd-instance	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim bsr-border	Cisco IOS 11.3 through 15.4; IOS XE 3.5	ip pim bsr-border	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim bsr-candidate	Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim bsr-candidate	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim dr-priority	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim dr-priority	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip pim log-neighbor-changes	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim log-neighbor-changes	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim neighbor-filter	Cisco IOS 11.3 through 15.4; IOS XE 3.5	ip pim neighbor-filter	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim query-interval	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5;	ip pim query-interval	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim register-source	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 6.2	ip pim register-source	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip pim rp-address	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim rp-address	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip pim rp-candidate	Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim rp-candidate	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip pim sparse-mode	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim sparse-mode	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip pim spt-threshold	Cisco IOS 11.1 through 15.4; IOS XR 3.0; IOS XE 3.5	ip pim spt-threshold	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip pim spt-threshold group-list	Cisco IOS 11.1 through 15.4	ip pim spt-threshold group-list	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip pim ssm range	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip pim ssm range	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip prefix-list	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 3.3; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip prefix-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip protocol	Cisco IOS 12.0 through 15.4	ip protocol (Monitor Reachability Probe Transmitter)	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ip proxy-arp	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	ip proxy-arp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	
ip radius source-interface	Cisco IOS 11.3 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ip radius source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip rip v2-broadcast	Cisco IOS 12.1 through 15.4; IOS XE 3.5	ip rip v2-broadcast	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip route	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip route	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ip routing	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ip routing	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁵	[REDACTED]
ip tacacs source-interface	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ip tacacs source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 access-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ipv6 access-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

“ipv6” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁶	[REDACTED]
ipv6 address	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 dhcp relay destination	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ipv6 dhcp relay destination	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 enable	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ipv6 enable	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]



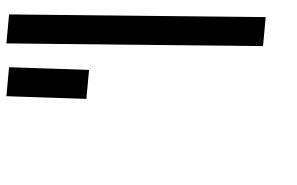

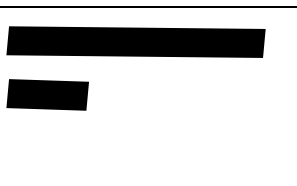
⁶ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁶	
ipv6 host	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	ipv6 host	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 ipv6 access-group	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	ipv6 access-group	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 nd managed-config-flag	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd managed-config-flag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 nd ns-interval	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd ns-interval	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁶	[REDACTED]
ipv6 nd other-config-flag	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd other-config-flag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 nd prefix	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.2 through 6.2	ipv6 nd prefix	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 nd ra interval	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd ra interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁶	
ipv6 nd ra lifetime	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd ra lifetime	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 nd ra suppress	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ipv6 nd ra suppress	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 nd reachable-time	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 nd reachable-time	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 nd router-preference	Cisco IOS 12.4 through 15.4; IOS XE 2.1 through 3.5	ipv6 nd router-preference	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁶	[REDACTED]
ipv6 neighbor	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 neighbor	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 ospf area	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf area	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 ospf cost	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf cost	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
ipv6 ospf dead-interval	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf dead-interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁶	
ipv6 ospf hello-interval	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf hello-interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 ospf network	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf network	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 ospf priority	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf priority	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 ospf retransmit-interval	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf retransmit-interval	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁶	
ipv6 ospf transmit-delay	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 ospf transmit-delay	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 prefix-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 prefix-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 route	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	ipv6 route	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
ipv6 router ospf	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	ipv6 router ospf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁶	[REDACTED]
ipv6 unicast-routing	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	ipv6 unicast-routing	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

“neighbor” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁷	[REDACTED]
neighbor activate	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5	neighbor activate	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
neighbor allowas-in	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	neighbor allowas-in	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
neighbor default-originate	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor default-originate	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

⁷ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁷	
neighbor description	Cisco IOS 11.3 through 15.4; IOS XE 3.5	neighbor description	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor ebgp-multihop	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0	neighbor ebgp-multihop	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor fall-over bfd	Cisco IOS 12.2 through 15.4; IOS XE 3.5	neighbor fall-over bfd	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor local-as	Cisco IOS 12.0 through 15.4; IOS XE 3.5	neighbor local-as	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁷	
neighbor next-hop-self	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	neighbor next-hop-self	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor password	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	neighbor password	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor peer-group (assigning members)	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor peer-group (neighbor assignment)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor peer-group (creating)	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor peer-group (create)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁷	
neighbor remote-as	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	neighbor remote-as	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor remove-private-as	Cisco IOS 11.0 through 15.4; IOS XE 3.5	neighbor remove-private-as	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor route-map	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	neighbor route-map (BGP)	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor route-reflector- client	Cisco IOS 11.1 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	neighbor route-reflector- client	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	




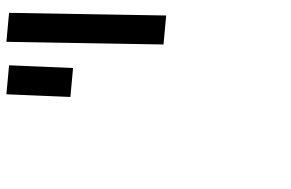


Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁷	[REDACTED]
neighbor send-community	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0	neighbor send-community	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
neighbor shutdown	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5	neighbor shutdown	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
neighbor soft-reconfiguration	Cisco IOS 11.2 through 15.4; IOS XE 3.5	neighbor soft-reconfiguration	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
neighbor timers	Cisco IOS 12.0 through 15.4; IOS XE 3.5	neighbor timers	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]





Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁷	
neighbor transport connection-mode	Cisco IOS 12.4 through 15.4	neighbor transport connection-mode	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor update-source	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0	neighbor update-source	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
neighbor weight	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	neighbor weight	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

“show” hierarchies





Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁸	[REDACTED]
show aaa method-lists	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show aaa method-lists	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show aaa sessions	Cisco IOS 15.2 through 15.4; IOS XE 3.5	show aaa sessions	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show arp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show arp	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]


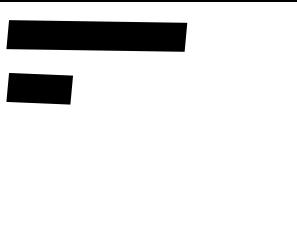
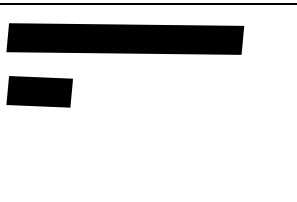
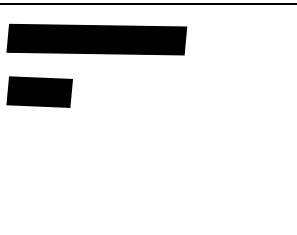
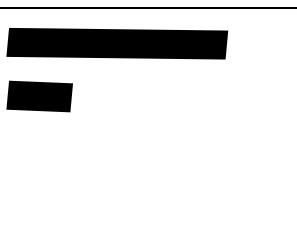
⁸ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show bfd neighbors	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	show bfd neighbors	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show clock	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show clock	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show dot1q-tunnel	Cisco IOS 12.2 through 15.4; NX-OS 5.0 through 6.2	show dot1q-tunnel	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show dot1x	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show dot1x	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show dot1x all summary	Cisco IOS 12.1 through 15.4; NX-OS 4.0 through 6.2	show dot1x all summary	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁸	
show dot1x statistics	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show dot1x statistics	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show environment all	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1	show environment all	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show environment cooling	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show environment cooling	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show environment power	IOS XR 3.0 through 5.2; NX-OS 5.0 through 6.2	show environment power	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show environment temperature	Cisco IOS 11.2 through 12.1; IOS XR 3.0 through 5.2; IOS XE 2.1	show environment temperature	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show etherchannel	Cisco IOS 12.0 through 15.4; IOS XE 3.5	show etherchannel	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show hostname	NX-OS 4.0 through 6.2	show hostname	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show hosts	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show hosts	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show interfaces	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show interfaces	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show interfaces capabilities	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show interfaces capabilities	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show interfaces description	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces description	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show interfaces flowcontrol	IOS 12.2 through 15.4; IOS XE 3.5	show flowcontrol	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show interfaces private-vlan mapping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces private-vlan mapping	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show interfaces status	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	show interfaces status	EOS v. 4.0.1, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show interfaces switchport	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces switchport	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show interfaces switchport backup	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show interfaces switchport backup	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show interfaces transceiver	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 6.2	show interfaces transceiver	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show interfaces trunk	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 6.2	show interfaces trunk	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show inventory	Cisco IOS 12.4 through 15.4; IOS XR 3.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show inventory	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show ip access-lists	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip access-lists	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip arp	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip arp	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip bgp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 3.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip bgp	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip bgp community	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip bgp community	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip bgp neighbors	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp neighbors (route type)	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip bgp neighbors	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip bgp neighbors	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip bgp paths	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp paths	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip bgp peer-group	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp peer-group	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip bgp regexp	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp regexp	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip bgp summary	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip bgp summary	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip community-list	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip community-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip dhcp snooping	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip dhcp snooping	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip extcommunity-list	Cisco IOS 12.1 through 15.4; IOS XE 3.5; NX-OS 6.2	show ip extcommunity-list	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip helper-address	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show ip helper-address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip igmp groups	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp groups	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip igmp interface	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp interface	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip igmp snooping	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp snooping	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED] [REDACTED] [REDACTED] [REDACTED]
show ip igmp snooping groups	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp snooping groups	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED] [REDACTED]
show ip igmp snooping mrouter	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip igmp snooping mrouter	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED] [REDACTED]
show ip igmp snooping querier	Cisco IOS 12.4 through 15.4; NX-OS 4.0 through 6.2	show ip igmp snooping querier	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED] [REDACTED]




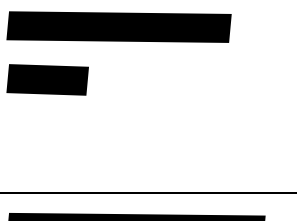
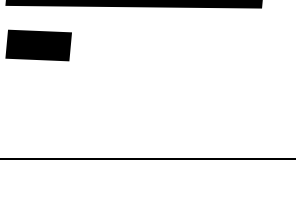
Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show ip interface	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip interface	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip interface brief	Cisco IOS 12.4 through 15.4; IOS XR 3.4 through 5.2; IOS XE 3.5	show ip interface brief	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip mfib	Cisco IOS 15.0 through 15.4; IOS XE 2.1 through 3.5	show ip mfib	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip mroute	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip mroute	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip mroute count	Cisco IOS 11.0 through 15.4; IOS XE 3.5	show ip mroute count	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip msdp mesh-group	NX-OS 4.0 through 6.2	show ip msdp mesh-group	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip msdp peer	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip msdp peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show ip msdp rpf-peer	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show ip msdp rpf-peer	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip msdp sa-cache	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip msdp sa-cache	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip msdp summary	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip msdp summary	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ip nat translations	Cisco IOS 11.2 through 15.4; IOS XE 3.5	show ip nat translations	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip ospf	Cisco IOS 11.0 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip ospf	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip ospf border-routers	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf border-routers	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip ospf database database-summary	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf database database-summary	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip ospf interface	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf interface	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip ospf neighbor	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip ospf neighbor	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip ospf request-list	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf request-list	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip ospf retransmission- list	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip ospf retransmission- list	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip pim interface	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip pim interface	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁸	
show ip pim neighbor	Cisco IOS 11.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip pim neighbor	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip pim rp	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip pim rp	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip pim rp-hash	Cisco IOS 11.3 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip pim rp-hash	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip prefix-list	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ip prefix-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip rip database	Cisco IOS 12.0 through 15.4; IOS XE 3.5	show ip rip database	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip rip neighbors	Cisco IOS 15.1 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip rip neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip route	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip route	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ip route summary	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show ip route summary	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	






Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ip route tag	Cisco IOS 15.2 through 15.4	show ip route tag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ipv6 access-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	show ipv6 access-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ipv6 bgp	NX-OS 4.0 through 6.2	show ipv6 bgp	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ipv6 bgp community	Cisco IOS 12.2; NX-OS 4.0 through 6.2	show ipv6 bgp community	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	


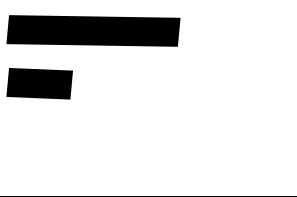
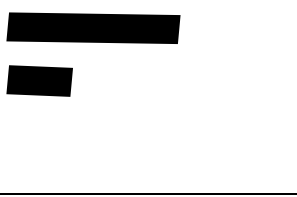
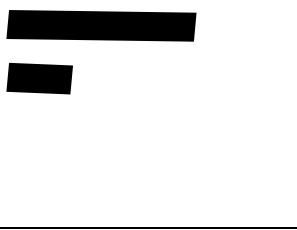
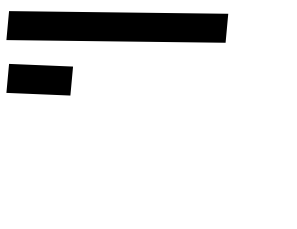
Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ipv6 bgp neighbors	NX-OS 4.0 through 6.2	show ipv6 bgp neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ipv6 bgp summary	NX-OS 4.0 through 6.2	show ipv6 bgp summary	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ipv6 interface	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ipv6 neighbors	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 neighbors	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show ipv6 ospf	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show ipv6 ospf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ipv6 ospf border- routers	Cisco IOS 12.2; IOS XE 2.1 through 3.5	show ipv6 ospf border- routers	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ipv6 ospf interface	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show ipv6 ospf interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ipv6 ospf neighbor	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5	show ipv6 ospf neighbor	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show ipv6 prefix-list	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 prefix-list	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ipv6 route	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show ipv6 route	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ipv6 route summary	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 5.2	show ipv6 route summary	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ipv6 route tag	Cisco IOS 15.2 through 15.4	show ipv6 route tag	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]






Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show isis database	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show isis database	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show isis interface	IOS XR 3.0 through 5.2; NX-OS 4.0 through 6.2	show isis interface	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show isis topology	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show isis topology	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show lacp counters	IOS XR 3.2 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show lacp counters	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show lacp interface	NX-OS 4.0 through 6.2	show lacp interface	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show lacp neighbor	NX-OS 4.0 through 6.2	show lacp neighbor	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show link state group	Cisco IOS 15.1 through 15.4; IOS XE 3.5	show link state group	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show lldp	Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5	show lldp	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show lldp neighbors	Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2	show lldp neighbors	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show lldp traffic	Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 3.5; NX-OS 5.0 through 6.2	show lldp traffic	EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show mac access-list	Cisco IOS 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show mac access-list	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show mac address-table	Cisco IOS 11.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show mac address-table	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show mac address-table aging time	Cisco IOS 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show mac address-table aging time	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show mac address-table count	IOS XE 3.5; NX-OS 4.0 through 6.2	show mac address-table count	EOS v. 4.0.1, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show module	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show module	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show monitor session	Cisco IOS 12.2 through 15.0; IOS XR 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	show monitor session	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show ntp associations	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	show ntp associations	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ntp status	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 5.0 through 6.2	show ntp status	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show policy-map control-plane	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show policy-map type control-plane	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show policy-map interface	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 6.2	show policy-map interface type qos	EOS v. 4.11.1.2, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁸	
show policy-map interface control-plane	NX-OS 5.0 through 6.2	show policy-map interface control-plane	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show port-channel summary	NX-OS 4.0 through 6.2	show port-channel summary	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show port-channel traffic	NX-OS 4.0 through 6.2	show port-channel traffic	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show port-security	Cisco IOS 12.2 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show port-security	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show port-security address	Cisco IOS 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show port-security address	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show port-security interface	IOS XE 3.5; NX-OS 4.0 through 6.2	show port-security interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show privilege	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 6.2	show privilege	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show ptp clock	NX-OS 5.2 through 6.2	show ptp clock	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show ptp parent	NX-OS 5.2 through 6.2	show ptp parent	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show ptp time-property	NX-OS 5.2 through 6.2	show ptp time-property	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show radius	IOS XR 3.2 through 5.2; NX-OS 4.0 through 6.2	show radius	EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show redundancy states	Cisco IOS 12.2 through 15.4; IOS XR 5.2; IOS XE 3.5	show redundancy states	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show reload	Cisco IOS 11.0 through 15.4; IOS XE 2.1	show reload	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show role	NX-OS 4.0 through 6.2	show role	EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show route-map	Cisco IOS 11.0 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show route-map	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show snmp chassis	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show snmp chassis	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp community	Cisco IOS 12.4 through 15.4; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp community	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp contact	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show snmp contact	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp engineID	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp engineID	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show snmp group	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp group	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp host	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp host	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp location	Cisco IOS 12.4 through 15.4; IOS XE 3.5	show snmp location	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp mib	Cisco IOS 12.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	show snmp mib	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show snmp source-interface	NX-OS 5.0 through 6.2	show snmp source-interface	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp trap	NX-OS 4.0 through 6.2	show snmp trap	EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp user	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show snmp user	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show snmp view	Cisco IOS 12.4 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	show snmp view	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show spanning-tree	Cisco IOS 12.0 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show spanning-tree	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show spanning-tree blockedports	NX-OS 6.2	show spanning-tree blockedports	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show spanning-tree bridge	NX-OS 4.0 through 6.2	show spanning-tree bridge	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show spanning-tree interface	NX-OS 4.0 through 6.2	show spanning-tree interface	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show spanning-tree mst	Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	show spanning-tree mst	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show spanning-tree mst configuration	Cisco IOS 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1; NX-OS 4.0 through 6.2	show spanning-tree mst configuration	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show spanning-tree mst interface	IOS XR 4.3 through 5.2; NX-OS 6.2	show spanning-tree mst interface	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show spanning-tree root	NX-OS 4.0 through 6.2	show spanning-tree root	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show storm-control	Cisco IOS 12.2 through 15.4; IOS XE 3.5	show storm-control	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show tacacs	Cisco IOS 11.2 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show tacacs	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show track	Cisco IOS 12.2 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show track	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show user-account	NX-OS 4.0 through 6.2	show user-account	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	[REDACTED]
show users	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show users	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show version	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show version	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
show vlan	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show vlan	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁸	
show vlan private-vlan	NX-OS 4.0 through 6.2	show vlan private-vlan	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show vlan summary	NX-OS 6.2	show vlan summary	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show vrf	Cisco IOS 12.2 through 15.4; IOS XR 3.5 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	show vrf	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
show vrrp	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	show vrrp	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

“snmp-server” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁹	[REDACTED]
snmp-server chassis-id	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	snmp-server chassis-id	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
snmp-server community	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server community	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
snmp-server contact	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5; NX-OS 4.0 through 6.2	snmp-server contact	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]






⁹ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁹	
snmp-server enable traps	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server enable traps	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
snmp-server engineID local	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	snmp-server engineID local	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
snmp-server engineID remote	Cisco IOS 12.1 through 15.4; IOS XR 4.3 through 5.2; IOS XE 2.1 through 3.5	snmp-server engineID remote	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
snmp-server group	Cisco IOS 11.3 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	snmp-server group	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁹	
snmp-server host	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server host	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
snmp-server location	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server location	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
snmp-server source-interface	Cisco IOS 12.2 through 15.4; IOS XE 2.1; NX-OS 5.0 through 6.2	snmp-server source-interface	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	





Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁹	
snmp-server user	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	snmp-server user	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
snmp-server view	Cisco IOS 11.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 2.1 through 3.5	snmp-server view	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree bpdupfilter	Cisco IOS 12.2 through 15.4; NX-OS 4.0 through 6.2	spanning-tree bpdupfilter	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree bpduguard	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree bpduguard	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁹	
spanning-tree bridge assurance	NX-OS 4.0 through 6.2	spanning-tree bridge assurance	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree cost	Cisco IOS 12.0 through 15.4; NX-OS 4.0 through 6.2	spanning-tree cost	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree guard	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree guard	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree link-type	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree link-type	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears⁹	
spanning-tree loopguard default	Cisco IOS 12.2; NX-OS 4.0 through 6.2	spanning-tree loopguard default	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree mode	Cisco IOS 12.2 through 15.4; NX-OS 4.0 through 6.2	spanning-tree mode	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree mst configuration	Cisco IOS 12.2 through 15.4; IOS XE 2.1 through 3.5; NX-OS 4.0 through 6.2	spanning-tree mst configuration	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree portfast bpdupfilter default	Cisco IOS 12.2	spanning-tree portfast bpdupfilter default	EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	





Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ⁹	[REDACTED]
spanning-tree portfast bpduguard default	Cisco IOS 12.2	spanning-tree portfast bpduguard default	EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

“spanning-tree” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears¹⁰	
spanning-tree port-priority	Cisco IOS 12.0 through 15.4; NX-OS 4.0 through 6.2	spanning-tree port-priority	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree transmit hold-count	Cisco IOS 12.2	spanning-tree transmit hold-count	EOS v. 4.0.1, EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
spanning-tree vlan	Cisco IOS 12.0 through 15.4; IOS XE 2.1; NX-OS 4.0 through 6.2	spanning-tree vlan	EOS v. 4.6.2, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

¹⁰ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

“vrrp” hierarchies

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco’s CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears¹¹	
vrrp authentication	Cisco IOS 12.0 through 15.4; IOS XE 3.5; NX-OS 6.2	vrrp authentication	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
vrrp delay reload	Cisco IOS 15.1 through 15.4; IOS XR 3.4 through 5.2; IOS XE 3.5	vrrp delay reload	EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
vrrp description	Cisco IOS 12.0 through 15.4; IOS XE 3.5	vrrp description	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

¹¹ At the end of this table I have provided an index correlating the specific EOS version numbers listed in this column to their corresponding user manual. My analysis is also based on my review of Arista source code, Cisco source code, documentation produced by the parties, deposition testimony, as well as testing of Cisco and Arista switches.

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ¹¹	
vrrp ip	Cisco IOS 12.0 through 15.4; IOS XR 5.2; IOS XE 3.5	vrrp ip	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
vrrp ip secondary	IOS 12.0 through 15.4; IOS XE 3.5	vrrp ip secondary	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
vrrp preempt	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	vrrp preempt	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	
vrrp priority	Cisco IOS 12.0 through 15.4; IOS XR 3.0 through 5.2; IOS XE 3.5	vrrp priority	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	

Cisco CLI Command Expression	Copyrighted Work(s) in Which Cisco's CLI Command Expression Appears	Substantially Similar Arista CLI Command Expression	Infringing Work(s) in Which Command Expression Appears ¹¹	[REDACTED]
vrrp shutdown	Cisco IOS 12.4 through 15.4; IOS XE 3.5	vrrp shutdown	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]
vrrp timers advertise	Cisco IOS 12.0 through 15.4; IOS XE 3.5	vrrp timers advertise	EOS v. 4.4.0, EOS v. 4.10.0, EOS v. 4.11.1.2, EOS v. 4.11.2.1, EOS v. 4.12.4, EOS v. 4.13.6F, EOS v. 4.13.7M, EOS v. 4.14.3F, EOS v. 4.14.5F, EOS v. 4.14.6M, EOS v. 4.15.0F	[REDACTED]

Arista User Manuals

Date	Manual	Bates Begin	Bates End
4/8/2009	Arista Networks EOS User Manual Version 4.0.1	CSI-CLI-00007244	CSI-CLI-00007472
3/31/2010	Arista Networks EOS User Manual Version 4.4.0	CSI-CLI-00007473	CSI-CLI-00007840
3/28/2011	Arista Networks EOS User Manual Version 4.6.2	CSI-CLI-00006858	CSI-CLI-00007243
7/19/2012	Arista Networks EOS User Manual Version 4.10.0	CSI-CLI-00007841	CSI-CLI-00008984
1/22/2013	Arista Networks EOS User Manual Version 4.11.1 - Rev. 2	CSI-CLI-00010517	CSI-CLI-00011972
3/1/2013	Arista Networks EOS User Manual Version 4.11.2.1	CSI-CLI-00008985	CSI-CLI-00010516
9/16/2013	Arista Networks EOS User Manual Version 4.12.4	CSI-CLI-00014141	CSI-CLI-00016000
4/14/2014	Arista Networks EOS User Manual Version 4.13.6F	CSI-CLI-00016001	CSI-CLI-00018140
6/17/2014	Arista Networks EOS User Manual Version 4.13.7M	CSI-CLI-00011973	CSI-CLI-00014140
10/2/2014	Arista Networks EOS User Manual Version 4.14.3F - Rev. 2	CSI-CLI-00018146	CSI-CLI-00020337
12/22/2014	Arista Networks EOS User Manual Version 4.14.5F - Rev. 2	CSI-CLI-00000084	CSI-CLI-00002331
1/19/2015	Arista Networks EOS User Manual Version 4.14.6M	CSI-CLI-00004616	CSI-CLI-00006857
4/2015	Arista Networks EOS User Manual Version 4.15.OF - Rev. 2.27	CSI-CLI-00020575	CSI-CLI-00022852
4/18/2015	Arista Networks EOS User Manual Version 4.15.OF	CSI-CLI-00002332	CSI-CLI-00004615
11/20/2015	Arista Networks EOS User Manual Version 4.15.3F	CSI-CLI-06302874	CSI-CLI-06305161

Exhibit Copying-6

Filed Under Seal In Its Entirety

Exhibit Copying-7

arista.txt

```
localhost>show ?
  arp                ARP table
  boot-extensions    Contents of boot extensions configuration
  clock              Display the system clock
  diagnostic          Show diagnostic tests
  dot1q-tunnel        Show all enabled dot1q-tunnel ports
  environment        Show environment status
  errdisable         Show errdisable information
  error              Show detailed information about an earlier error
  extensions          EOS extensions present on this device
  flowcontrol         Show interface flowcontrol information
  history             Display the session command history
  installed-extensions Installed EOS extensions
  interfaces          Interface status and configuration
  inventory           Display hardware inventory with serial numbers
  ip                  IP information
  lacp                Link Aggregation Control Protocol (LACP) status
  lldp                Show Link Layer Discovery Protocol (LLDP) status
  logging             Show the contents of logging buffers
  mac-address-table   MAC forwarding table
  mlag                MLAG status
  monitor             Mirroring information
  ntp                 Network Time Protocol
  port-channel        port-channel status
  privilege            Display the current privilege level
  processes           Show cpu and memory usage of running processes
  radius              RADIUS server attributes
  reload              Display system reload status
  sflow               sFlow configuration
  snmp                SNMP statistics
  spanning-tree        Spanning tree topology
  tacacs              TACACS+ server attributes
  uptime              Show how long the system has been running
  version             Show switch version information
  vlan                Show VLAN status
```

```
localhost>show interface ?
  Ethernet           Ethernet interface
  Loopback            Loopback interface
  Management          Management interface
  Port-Channel        Port-Channel Interface
  Vlan                Vlan interface
  capabilities         Show interface capabilities information
  counters             Interface counters
  description          Show interface description
  flowcontrol          Show interface flowcontrol information
  negotiation          Show interface Auto-Negotiation status
  phy                  Display low-level PHY status
  status              Show interface line status
  switchport          Show interface switchport information
  transceiver          Show interface transceiver
  vlans                Show interface VLAN information
  |                   Output modifiers
<cr>
```

```
localhost>show interface Ethernet ?
$                end of range
<1-52>           Ethernet Port number
```

```
localhost>show interface Ethernet
```

```
#####
For Cisco 3560
```

arista.txt

```

Switch>show ?
aaa          Show AAA values
adjacency    Adjacent nodes
arp          ARP table
auto         Show Automation Template
cca          CCA information
class-map    Show QoS Class Map
clock        Display the system clock
cns          CNS agents
controllers  Interface controller status
crypto       Encryption module
dampening    Display dampening information
diagnostic   Show command for diagnostic
dot1q-tunnel Display dot1q tunnel ports
dot1x        Dot1x information
eigrp        EIGRP show commands
env          Environmental facilities
epm          EPM information
errdisable   Error disable
etherchannel EtherChannel information
exception    exception informations
flash:       display information about flash: file system
flowcontrol  show flow control information
format       Show format information
history      Display the session command history
hosts        IP domain-name, lookup style, nameservers, and host table
idprom       show IDPROMs for interfaces
if-mgr       if-mgr information
inventory    Show the physical inventory
ip           IP information
ipc          Interprocess communications commands
ipv6         IPV6 information
kerberos     Show Kerberos values
kron         Kron Subsystem
l2           Layer 2
l2protocol-tunnel Display L2PT status and configurations
lacp         Port channel information
link         Show Link
lldp         LLDP information
location     Display the system location
login        Display Secure Login Configurations and State
mab          MAB information
mac          MAC configuration
macro        Show command macros
memory       Memory statistics
mls          mls global commands
monitor      Monitoring different system events
network-policy Network Policy profile information
odm-format   Show the schema used for ODM input file
pagp         Port channel information
platform     platform specific show commands
pm           Show Port Manager commands
policy-map   Show QoS Policy Map
power        Switch Power
queue        Show queue contents
queueing     Show queueing configuration
radius       Shows radius information
resource     Resource group statistics
rmon         rmon statistics
sas         show SASL information
sessions     Information about Telnet connections
shell        Display shell information

```

Page 2

arista.txt

snmp	snmp statistics
ssh	Status of SSH server connections
ssl	Show SSL command
storm-control	Show storm control configuration
table-map	Show Table Map
tacacs	Shows tacacs+ server statistics
template	Template information
terminal	Display terminal configuration parameters
time-range	Time range
udld	UDLD information
users	Display information about terminal lines
version	System hardware and software status
vlan	VTP VLAN status
vmps	VMPS version information
vrf	VPN Routing/Forwarding instance information
vstack	Vstack show commands
vtp	VTP information
xdr	Show details about XDR
xsd-format	Show the ODM XSD for the command

Switch>show interface ?

Async	Async interface
Auto-Template	Auto-Template interface
BVI	Bridge-Group Virtual Interface
CTunnel	CTunnel interface
Dialer	Dialer interface
FastEthernet	FastEthernet IEEE 802.3
Filter	Filter interface
Filtergroup	Filter Group interface
GigabitEthernet	GigabitEthernet IEEE 802.3z
GroupVI	Group Virtual interface
Loopback	Loopback interface
Null	Null interface
Port-channel	Ethernet Channel of interfaces
Portgroup	Portgroup interface
Pos-channel	POS Channel of interfaces
Tunnel	Tunnel interface
Vif	PGM Multicast Host interface
Virtual-Template	Virtual Template interface
Virtual-TokenRing	Virtual TokenRing
Vlan	Catalyst Vlan
accounting	Show interface accounting
capabilities	Show interface capabilities information
counters	Show interface counters
crb	Show interface routing/bridging info
dampening	Show interface dampening info
debounce	Show interface debounce time info
description	Show interface description
etherchannel	Show interface etherchannel information
fair-queue	Show interface weighted Fair Queueing (WFQ) info
fcpa	Fiber Channel
flowcontrol	Show interface flowcontrol information
irb	Show interface routing/bridging info
mac-accounting	Show interface MAC accounting info
mpls-exp	Show interface MPLS experimental accounting info
mtu	Show interface mtu
precedence	Show interface precedence accounting info
private-vlan	Show interface private vlan information
pruning	Show interface trunk VTP pruning information
random-detect	Show interface Weighted Random Early Detection (WRED) info
rate-limit	Show interface rate-limit info
stats	Show interface packets & octets, in & out, by switching path

```

                                arista.txt
status      Show interface line status
summary    Show interface summary
switchport  Show interface switchport information
transceiver Show interface transceiver
trunk       Show interface trunk information
|           Output modifiers
<cr>
```

```
Switch>show interface Ethernet ?
% Unrecognized command
Switch>show interface Fast
Switch>show interface FastEthernet ?
<0-0> FastEthernet interface number
```

```
Switch>show interface FastEthernet
```

arista-7010.txt

About 4.0.4-2086886

Press Control-C now to enter About shell

Booting flash:/EOS-4.14.9.1M.swi
 [7.229739] Starting new kernel
 Switching rootfs

Welcome to Arista Networks EOS 4.14.9.1M
 Mounting filesystems: [OK]
 Starting udev: [OK]
 Setting hostname localhost: [OK]
 Entering non-interactive startup
 Starting ProcMgr: [OK]
 Starting EOS initialization stage 1: [OK]
 ip6tables: Applying firewall rules: [OK]
 iptables: Applying firewall rules: [OK]
 iptables: Loading additional modules: nf_conntrack_tftp [OK]
 Starting system logger: [OK]
 Starting NorCal initialization: [OK]
 Retrigger failed udev events [OK]
 Starting mcelog daemon
 Starting EOS initialization stage 2: [OK]
 Starting Power On Self Test (POST): [OK]
 Starting crond: [OK]
 Completing EOS initialization (press ESC to skip): [FAILED]
 EOS will continue to boot without waiting for full initialization.
 You may not be able to login using normal accounts, but you may be
 able to login as root.
 Model: DCS-7010T-48
 Serial Number: HSH16130550
 System RAM: 3907136 kB
 Flash Memory size: 3.3G

Arista Networks EOS 4.14.9.1M
 localhost login: admin

```
localhost>
localhost>en
localhost#
localhost#show version
Arista DCS-7010T-48
Hardware version: 01.01
Serial number: HSH16130550
System MAC address: 444c.a88f.f7f9
```

```
Software image version: 4.14.9.1M
Architecture: i386
Internal build version: 4.14.9.1M-2714873.41491M
Internal build ID: 0c909198-32d7-4253-85d6-d0f013b47dbc
```

```
Uptime: 3 minutes
Total memory: 3907136 kB
Free memory: 1642992 kB
```

arista-7010.txt

```

localhost#
localhost#
localhost#
localhost#show version detail
Arista DCS-7010T-48
Hardware version:    01.01
Deviations:
Serial number:      HSH16130550
System MAC address: 444c.a88f.f7f9

Software image version: 4.14.9.1M
Architecture:         i386
Internal build version: 4.14.9.1M-2714873.41491M
Internal build ID:     0c909198-32d7-4253-85d6-d0f013b47dbc

Uptime:              4 minutes
Total memory:        3907136 kB
Free memory:         1610028 kB

```

Installed software packages:

Package	Version	Release
Aaa	1.1.0	2714297.41491M
Aaa-cli	1.1.0	2714297.41491M
Aaa-lib	1.1.0	2714297.41491M
Aboot-utils	1.0.1	2713877.41491M
Ac1	1.0.1	2714297.41491M
Ac1-cli	1.0.1	2714297.41491M
Ac1-lib	1.0.1	2714297.41491M
Ac1Snmp	1.0.0	2714297.41491M
Agent	1.0.0	2713877.41491M
AgentMonitor	1.0.1	2714297.41491M
AgentMonitor-cli	1.0.1	2714297.41491M
AgentMonitor-lib	1.0.1	2714297.41491M
Ale	1.0.0	2714297.41491M
AleCounters	1.0.0	2713877.41491M
AleFlow	1.0.0	2714297.41491M
AleVxlan	1.0.0	2714297.41491M
Altera	1.0.2	2714297.41491M
Aom	1.0.0	2714297.41491M
Aom-lib	1.0.0	2714297.41491M
ArPyUtils	1.0.0	2713680.41491M
Arbus	2.1.0	2714297.41491M
Arbus-lib	2.1.0	2714297.41491M
Aresolve	1.0.1	2714297.41491M
Ark	1.0.2	2713877.41491M
Arnet	2.1.2	2714297.41491M
Arnet-cli	2.1.2	2714297.41491M
Arnet-lib	2.1.2	2714297.41491M
Arp	1.0.1	2714297.41491M
Arp-cli	1.0.1	2714297.41491M
Arp-lib	1.0.1	2714297.41491M
Arsys	1.5.2	2714297.41491M
Arsys-cli	1.5.2	2714297.41491M
Arsys-lib	1.5.2	2714297.41491M
Arsys-modular	1.5.2	2714297.41491M
Arsys-modular-lib	1.5.2	2714297.41491M
Artist	1.0.1	2714297.41491M
Artist-lib	1.0.1	2714297.41491M
AsicPktTestLib	1.0.0	2714297.41491M
AsicUtils	1.0.0	2713877.41491M
Asu	1.0.0	2714297.41491M

		arista-7010.txt
Asu-cli	1.0.0	2714297.41491M
Asu-lib	1.0.0	2714297.41491M
BcmMdio	1.0.0	2714297.41491M
BcmMdio-lib	1.0.0	2714297.41491M
Bfd	1.0.1	2714297.41491M
Bfd-cli	1.0.1	2714297.41491M
Bfd-lib	1.0.1	2714297.41491M
BfdTest	1.0.0	2714297.41491M
Bgp	1.0.0	2714297.41491M
Brad	1.0.1	2714297.41491M
Capi	1.0.1	2714297.41491M
Capi-cli	1.0.1	2714297.41491M
Capi-lib	1.0.1	2714297.41491M
Cdp	1.0.1	2714297.41491M
Cdp-lib	1.0.1	2714297.41491M
Cli	1.13.2	2714297.41491M
Cli-lib	1.13.2	2714297.41491M
CliMode	1.0.0	2713877.41491M
CliSession	1.0.1	2714297.41491M
CliSession-lib	1.0.1	2714297.41491M
ConfigSession	1.0.0	2714297.41491M
ConfigSession-cli	1.0.0	2714297.41491M
ControllerCommon	1.0.0	2714297.41491M
ControllerCommon-lib	1.0.0	2714297.41491M
ControllerDebug	1.0.0	2714297.41491M
ControllerDebug-cli	1.0.0	2714297.41491M
ControllerDebug-lib	1.0.0	2714297.41491M
ControllerRegistration	1.0.0	2714297.41491M
ControllerRegistration-cli	1.0.0	2714297.41491M
ControllerRegistration-lib	1.0.0	2714297.41491M
Controllerdb	1.0.0	2714297.41491M
Controllerdb-cli	1.0.0	2714297.41491M
Controllerdb-lib	1.0.0	2714297.41491M
Cpld	1.0.0	2714297.41491M
CpuComplex	1.0.1	2714297.41491M
CpuFabric	1.0.1	2714297.41491M
Dcb	1.0.0	2714297.41491M
Debug	1.0.1	2714297.41491M
DeltaPower	1.0.0	2714297.41491M
DhcpRelay	2.0.0	2714297.41491M
DhcpRelay-cli	2.0.0	2714297.41491M
DhcpRelay-lib	2.0.0	2714297.41491M
Diags	2.2.3	2714297.41491M
Diags-cli	2.2.3	2714297.41491M
Diags-lib	2.2.3	2714297.41491M
DiagsTools	1.0.1	2714297.41491M
DiagsTools-lib	1.0.1	2714297.41491M
DirectFlow	1.0.0	2714297.41491M
Dos	1.0.1	2714297.41491M
Dos-lib	1.0.1	2714297.41491M
DosBroadcom	1.0.0	2714873.41491M
DosFocalPoint	1.0.0	2714297.41491M
DosSystem	1.0.1	2714873.41491M
Dot1x	1.0.0	2714297.41491M
Dot1x-cli	1.0.0	2714297.41491M
Dot1x-lib	1.0.0	2714297.41491M
Ebra	2.0.6	2714297.41491M
Ebra-cli	2.0.6	2714297.41491M
Ebra-lib	2.0.6	2714297.41491M
EbraSnmp	1.0.1	2714297.41491M
EbraSnmp-cli	1.0.1	2714297.41491M
EbraSnmp-lib	1.0.1	2714297.41491M
EmersonPower	1.1.1	2714297.41491M

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EntityMib	1.0.1	2714297.41491M
Environment	1.1.0	2713877.41491M
Eos	4.14.3	2714873.41491M
Eos-initscripts	9.20.2	2713181.41491M
Eos-release	4.14.3	2713181.41491M
Eos-udev	167	8.fc14
EosInit	1.0.1	2714297.41491M
EosInit-cli	1.0.1	2714297.41491M
EosInit-lib	1.0.1	2714297.41491M
EosKernel	3.4.43.Ar	2713181.41491M
EosUtils	1.1.0	2713877.41491M
EthIntf	1.0.1	2714297.41491M
EthIntf-cli	1.0.1	2714297.41491M
EthIntfSnmp	1.0.0	2714297.41491M
EventMgr	1.0.1	2714297.41491M
EventMgr-cli	1.0.1	2714297.41491M
EventMgr-lib	1.0.1	2714297.41491M
EventMon	1.0.1	2714297.41491M
EventMon-cli	1.0.1	2714297.41491M
EventMon-lib	1.0.1	2714297.41491M
ExtEntity	1.0.0	2714297.41491M
ExtensionMgr	1.0.1	2714297.41491M
ExtensionMgr-cli	1.0.1	2714297.41491M
FastServerFailover	1.0.1	2714297.41491M
FastServerFailover-cli	1.0.1	2714297.41491M
FastServerFailover-lib	1.0.1	2714297.41491M
FaultInjection	1.0.1	2714297.41491M
FaultInjection-cli	1.0.1	2714297.41491M
Fhrp	1.0.1	2714297.41491M
Fhrp-cli	1.0.1	2714297.41491M
Fhrp-lib	1.0.1	2714297.41491M
FhrpSnmp	1.1.0	2714297.41491M
FhrpSnmp-lib	1.1.0	2714297.41491M
FileCli	1.0.0	2714297.41491M
FileCli-lib	1.0.0	2714297.41491M
FileSystems	1.0.0	2714297.41491M
FmApi	1.1.1	2714297.41491M
Fru	2.5.2	2714297.41491M
Fru-cli	2.5.2	2714297.41491M
Fru-lib	2.5.2	2714297.41491M
Fru-util	2.5.2	2714297.41491M
FruSnmp	1.0.0	2714297.41491M
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Gmp	1.0.1	2714297.41491M
Gmp-IgmpHost	1.0.1	2714297.41491M
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HadoopTracer	1.0.0	2714297.41491M
Hardware	1.0.1	2714297.41491M
Hardware-cli	1.0.1	2714297.41491M
HostResourcesMib	1.0.1	2714297.41491M
Hsc	1.0.1	2714873.41491M
Hsc-cli	1.0.1	2714873.41491M
Igmp	1.0.1	2714297.41491M
Igmp-cli	1.0.1	2714297.41491M
Igmp-lib	1.0.1	2714297.41491M
IgmpHostProxy	1.0.1	2714297.41491M
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IgmpSnmp	1.0.0	2714297.41491M
IgmpSnooping	1.0.1	2714297.41491M
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IgmpSnooping-lib	1.0.1	2714297.41491M
Intf	1.2.1	2714297.41491M
Intf-cli	1.2.1	2714297.41491M

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IntfSnmpp	1.0.1	2714297.41491M
IntfSnmpp-cli	1.0.1	2714297.41491M
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IpEth-cli	1.0.1	2714297.41491M
IpEthTest	1.0.0	2714297.41491M
Ipv6NeighborDiscovery	1.0.1	2714297.41491M
Ipv6NeighborDiscovery-cli	1.0.1	2714297.41491M
Ipv6NeighborDiscovery-lib	1.0.1	2714297.41491M
Ira	1.12.6	2714297.41491M
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Ira-lib	1.12.6	2714297.41491M
IraAcl	1.0.0	2714297.41491M
IraAcl-lib	1.0.0	2714297.41491M
IraSnmpp	1.0.1	2714297.41491M
Isis	1.0.1	2714297.41491M
Isis-cli	1.0.1	2714297.41491M
Jtag	1.0.1	2714297.41491M
Kabini	1.0.1	2714297.41491M
KernelFib	1.0.0	2714297.41491M
KernelMfib	1.0.0	2714297.41491M
Lag	2.0.1	2714297.41491M
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Lag-lib	2.0.1	2714297.41491M
LagSnmpp	1.0.0	2714297.41491M
Lanz	1.0.0	2714297.41491M
Lanz-cli	1.0.0	2714297.41491M
Lattice	1.0.1	2714297.41491M
Launcher	1.3.3	2714297.41491M
Launcher-cli	1.3.3	2714297.41491M
Launcher-lib	1.3.3	2714297.41491M
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Lm73	1.0.2	2714297.41491M
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LogMgr-cli	1.2.0	2714297.41491M
LogMgr-lib	1.2.0	2714297.41491M
MacMon	1.0.0	2714297.41491M
MacMon-cli	1.0.0	2714297.41491M
MacMon-lib	1.0.0	2714297.41491M
MacPhyConc	1.0.1	2714297.41491M
MacPhyConc-cli	1.0.1	2714297.41491M
Max6658	1.0.1	2714297.41491M
McastBoundary	1.0.0	2714297.41491M
McastBoundary-cli	1.0.0	2714297.41491M
Mcp55	1.0.1	2714297.41491M
Mendocino	1.0.0	2714873.41491M
Mendocino-firmware	1.0.0	2714873.41491M
MgmtSecurity	1.0.1	2714297.41491M
MgmtSecurity-cli	1.0.1	2714297.41491M
Mirroring	1.0.1	2714297.41491M
Mirroring-cli	1.0.1	2714297.41491M
Mirroring-lib	1.0.1	2714297.41491M
Mlag	1.0.1	2714297.41491M
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Mlag-lib	1.0.1	2714297.41491M
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Msrp-lib	1.0.5	2714297.41491M
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Mvrp-hw-lib	1.0.5	2714297.41491M
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Napa	1.0.0	2714873.41491M
Nat	1.0.0	2714297.41491M
NetworkTools	1.0.2	2714297.41491M
NetworkTools-cli	1.0.2	2714297.41491M
NorCal	2.4.0	2714873.41491M
NorCal-firmware	2.4.0	2714873.41491M
NorCalSys	1.2.0	2714297.41491M
Ntp	1.3.2	2714297.41491M
Ntp-cli	1.3.2	2714297.41491M
ObjectTracking	1.0.1	2714297.41491M
ObjectTracking-cli	1.0.1	2714297.41491M
ObjectTracking-lib	1.0.1	2714297.41491M
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OpenStack	1.0.0	2714297.41491M
OpenStack-cli	1.0.0	2714297.41491M
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Ospf	1.0.0	2714297.41491M
Ospf3	1.0.0	2714297.41491M
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Pca9555-lib	1.0.1	2714297.41491M
PciBus	1.0.1	2714297.41491M
PciBus-cli	1.0.1	2714297.41491M
PciBus-lib	1.0.1	2714297.41491M
PhyAeluros	2.2.0	2714297.41491M
PhyAeluros-firmware	2.2.0	2714297.41491M
PhyAeluros-lib	2.2.0	2714297.41491M
PhyBcm	1.0.1	2714297.41491M
PhyEee	1.1.1	2714297.41491M
PhyEee-cli	1.1.1	2714297.41491M
PhyEthtool	2.6.1	2714297.41491M
PhyEthtool-lib	2.6.1	2714297.41491M
Picasso	1.0.1	2714297.41491M
Picasso-lib	1.0.1	2714297.41491M
Pim	2.0.1	2714297.41491M
Pim-cli	2.0.1	2714297.41491M
PimBsr	1.0.0	2714297.41491M
PimBsr-cli	1.0.0	2714297.41491M
PimReg	1.0.0	2714297.41491M
PimReg-cli	1.0.0	2714297.41491M
PimSnmp	1.0.0	2714297.41491M
Pism	1.0.0	2714297.41491M
Pism-cli	1.0.0	2714297.41491M
PlxPex8600-lib	1.0.2	2714297.41491M
Pmbus	1.0.1	2714297.41491M
Pmbus-cli	1.0.1	2714297.41491M
Pmbus-lib	1.0.1	2714297.41491M
PolicyMap	1.0.0	2714297.41491M
Power	1.5.1	2714297.41491M
Power-cli	1.5.1	2714297.41491M
Power-lib	1.5.1	2714297.41491M
PowerOne	1.0.1	2714297.41491M
PowerOne-lib	1.0.1	2714297.41491M
ProcMgr	1.7.1	2713877.41491M
Psmi	1.0.1	2714297.41491M
Psmi-cli	1.0.1	2714297.41491M
Psmi-lib	1.0.1	2714297.41491M
Ptp	1.0.1	2714297.41491M

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Ptp-cli	1.0.1	2714297.41491M
Ptp-lib	1.0.1	2714297.41491M
PtpTimeSync	1.0.0	2714297.41491M
PyWrappers	1.0.0	2713680.41491M
PyWrappers-dnsmasq	1.0.0	2713680.41491M
PyWrappers-eos-initscripts	1.0.0	2713680.41491M
PyWrappers-fuse-zip	1.0.0	2713680.41491M
PyWrappers-iptables	1.0.0	2713680.41491M
PyWrappers-iptables-ipv6	1.0.0	2713680.41491M
PyWrappers-iputils	1.0.0	2713680.41491M
PyWrappers-lftp	1.0.0	2713680.41491M
PyWrappers-net-snmp	1.0.0	2713680.41491M
PyWrappers-net-snmp-utils	1.0.0	2713680.41491M
PyWrappers-ntp-udel	1.0.0	2713680.41491M
PyWrappers-openssh-clients	1.0.0	2713680.41491M
PyWrappers-openssh-server	1.0.0	2713680.41491M
PyWrappers-rsyslog	1.0.0	2713680.41491M
PyWrappers-tcpdump	1.0.0	2713680.41491M
PyWrappers-telnet	1.0.0	2713680.41491M
PyWrappers-telnet-server	1.0.0	2713680.41491M
PyWrappers-traceroute	1.0.0	2713680.41491M
PyWrappers-xinetd	1.0.0	2713680.41491M
Qos	1.0.0	2714297.41491M
QosSnmp	1.0.0	2714297.41491M
Radius	1.0.2	2714297.41491M
Radius-cli	1.0.2	2714297.41491M
ReachabilityMonitor	1.0.0	2714297.41491M
RedSup	1.7.5	2714297.41491M
RedSupSnmp	1.0.0	2714297.41491M
Rib	2.0.3	2714297.41491M
Rib-cli	2.0.3	2714297.41491M
Rib-lib	2.0.3	2714297.41491M
Rip	1.0.1	2714297.41491M
Rip-cli	1.0.1	2714297.41491M
RouteMap	1.0.1	2714297.41491M
RouteMap-cli	1.0.1	2714297.41491M
Ruby-cli	1.0.1	2714297.41491M
Saguaro	1.0.0	2714297.41491M
Scd	1.0.2	2714297.41491M
Scd-lib	1.0.2	2714297.41491M
ScdEmUtils	1.0.0	2713877.41491M
SchanAccel	1.0.1	2714297.41491M
SchanAccel-cli	1.0.1	2714297.41491M
SchanAccel-lib	1.0.1	2714297.41491M
Sflow	1.0.1	2714297.41491M
Si5327	1.0.0	2714297.41491M
Smash	1.0.3	2713877.41491M
Snmp	1.2.1	2714297.41491M
Snmp-cli	1.2.1	2714297.41491M
Snmp-lib	1.2.1	2714297.41491M
Sol	1.0.1	2714297.41491M
Sol-lib	1.0.1	2714297.41491M
StageMgr	1.0.0	2713877.41491M
StageMgr-lib	1.0.0	2713877.41491M
StandbyCpld	1.0.1	2714297.41491M
StorageDevices-cli	1.0.1	2714297.41491M
StormControl	1.0.0	2714297.41491M
Stp	1.1.1	2714297.41491M
Stp-cli	1.1.1	2714297.41491M
Stp-lib	1.1.1	2714297.41491M
Strata	1.3.1	2714873.41491M
StrataApi	1.0.1	2714297.41491M
StrataCentral	1.3.1	2714297.41491M

StrataCentral-agent	1.3.1	arista-7010.txt
StrataCommon	1.0.1	2714297.41491M
StrataCommon-lib	1.0.1	2714297.41491M
StrataL2	1.0.0	2714873.41491M
StrataL3	1.0.0	2714873.41491M
StrataLag	1.0.1	2714297.41491M
StrataVlanTopo	1.0.0	2714873.41491M
SuperServer	1.0.1	2714297.41491M
SysMgr	2.6.0	2714297.41491M
SysMgr-cli	2.6.0	2714297.41491M
SysMgr-lib	2.6.0	2714297.41491M
SysMgrSnmp	1.0.1	2714297.41491M
Sysdb	1.10.0	2713877.41491M
SysdbAgent	1.0.1	2714297.41491M
TacSmash	1.0.4	2713877.41491M
TacSmash-cli	1.0.4	2713877.41491M
Tacacs	1.0.1	2714297.41491M
Tacacs-cli	1.0.1	2714297.41491M
Tacacs-lib	1.0.1	2714297.41491M
TaccPyUtils	1.0.0	2713680.41491M
TapAggGui	1.0.0	2714297.41491M
ThermoMgr	1.7.1	2714297.41491M
ThermoMgr-cli	1.7.1	2714297.41491M
ThermoMgr-lib	1.7.1	2714297.41491M
Topology	1.0.1	2714297.41491M
Topology-cli	1.0.1	2714297.41491M
Topology-controller	1.0.1	2714297.41491M
Topology-controller-cli	1.0.1	2714297.41491M
Topology-lib	1.0.1	2714297.41491M
Tunnel	1.0.0	2714297.41491M
Units	1.1.0	2713877.41491M
VirtualCable	1.0.1	2714297.41491M
VirtualCable-cli	1.0.1	2714297.41491M
Vm	1.0.1	2714297.41491M
Vm-cli	1.0.1	2714297.41491M
VmTracer	1.0.1	2714297.41491M
VmwareVI	1.0.1	2714297.41491M
Vrf	1.0.1	2714297.41491M
Vxlan	1.0.1	2714297.41491M
Vxlan-cli	1.0.1	2714297.41491M
VxlanController	1.0.1	2714297.41491M
VxlanController-cli	1.0.1	2714297.41491M
VxlanController-formatlib	1.0.1	2714297.41491M
VxlanController-lib	1.0.1	2714297.41491M
VxlanTest	1.0.0	2714297.41491M
wbem	1.0.0	2714297.41491M
Xcvr	1.2.1	2714297.41491M
Xcvr-cli	1.2.1	2714297.41491M
XcvrCtrl	1.0.2	2714297.41491M
Xilinx	1.0.1	2714297.41491M
Xmpp	1.4.2	2714297.41491M
Xmpp-cli	1.4.2	2714297.41491M
Xmpp-lib	1.4.2	2714297.41491M
ZeroTouch	1.0.0	2714297.41491M
arista-bde	1.0.0	2714297.41491M
audit-libs	2.1.3	1.fc14
aufs2-util	1.git.Ar	2713181.41491M
authconfig	6.1.11	1.fc14
basesystem	10.0	3
bash	4.1.16Ar	4.fc14
bcmaccel	1.0.1	2714297.41491M
bind-libs	9.7.4	0.3.b1.fc14
bind-utils	9.7.4	0.3.b1.fc14

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bridge-utils	1.2	9.fc13
bzip2	1.0.6	1.fc14.1
bzip2-libs	1.0.6	1.fc14.1
ca-certificates	2011.78	1.fc14
chkconfig	1.3.49	1.fc14
compat-gsoap	2.7.13	2.fc14.2713181.41491M
conntrack-tools	0.9.14	1.fc14
coreutils	8.5	7.fc14
coreutils-libs	8.5	7.fc14
cpio	2.11	2.fc14
cracklib	2.8.16	4.fc14
cracklib-dicts	2.8.16	4.fc14
cronie	1.4.8	2.fc14
cronie-anacron	1.4.8	2.fc14
crontabs	1.11	1.20101115git.fc14
curl	7.32.0	2713680.41491M
cyrus-sasl	2.1.23	12.fc14
cyrus-sasl-lib	2.1.23	12.fc14
cyrus-sasl-md5	2.1.23	12.fc14
db4	4.8.30	2.fc14
db4-utils	4.8.30	2.fc14
dbus-libs	1.4.0	3.fc14
device-mapper	1.02.63	2.fc14
device-mapper-libs	1.02.63	2.fc14
dhclient	4.2.0	2713181.41491M
diffutils	2.8.1	29.fc14
dmamem	1.0.1	2714297.41491M
dnsmasq	2.59	2713181.41491M
dosfstools	3.0.22	2.fc18
e2fsprogs	1.41.12	6.fc14
e2fsprogs-libs	1.41.12	6.fc14
ed	1.4	2.fc14
eject	2.1.5	20.fc14
elfutils-libelf	0.152	1.fc14
esmtplib	1.0	6.fc12
ethtool	2.6.39	1.fc14
expat	2.0.1	10.fc13
file-libs	5.04	17.fc14
filesystem	2.4.35	1.fc14
findutils	4.5.9	2.fc14
fipscheck	1.2.0	4.fc13
fipscheck-lib	1.2.0	4.fc13
fpdma	1.0.0.Ar	2714297.41491M
freeradius-client	1.1.6	2713181.41491M
freetype	2.4.2	5.fc14
fuse	2.8.5	5.fc14
fuse-libs	2.8.5	5.fc14
fuse-zip	0.2.11	1.fc13
gamin	0.1.10	8.fc14
gawk	3.1.8	3.fc14
gdb	7.2	51.fc14
gdb-gdbserver	7.2	51.fc14
gdbm	1.8.3	8.fc14
gdisk	0.7.2	1.fc14
glib2	2.26.0	2.fc14
glibc	2.13	2
glibc-common	2.13	2
gmp	4.3.1	7.fc14
gnupg2	2.0.16	3.fc14.1
gnutls	2.8.6	2.fc14
gpgme	1.2.0	3.fc14
grep	2.8	2.fc14
gzip	1.4	1.fc14

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hardlink	1.0	9.fc12
hdparm	9.27	1.fc13
hostname	3.04	2.fc14
hwdata	0.232	1.fc14
i2c-tools	3.0.2	4.fc12
info	4.13a	13.fc14
inotify-tools	3.14	1.fc14
iperf	2.0.5.Ar	2713181.41491M
iproute	3.0.Ar	2713181.41491M
iptables	1.4.9	1.fc14
iptables-ipv6	1.4.9	1.fc14
iputils	20100418	3.fc14
jansson	1.2	1.fc13
jsonrpc-lib	1.0.0	2713680.41491M
kbfd	1.0.0.Ar	2713680.41491M
keyutils-libs	1.2	6.fc12
krb5-libs	1.8.4	2.fc14
kvm-kmod	2.6.38.8	2713181.41491M
lcms-libs	1.19	2.fc14
less	436	11.fc14
lftp	4.0.9	3.fc14
libacl	2.2.49	9.fc14
libassuan	2.0.0	2.fc14
libattr	2.4.44	6.fc14
libblkid	2.18	4.8.fc14
libbsd	0.2.0	3.fc13
libcap	2.22	1.fc14
libcap-ng	0.6.5	1.fc14
libcom_err	1.41.12	6.fc14
libcurl	7.32.0	2713680.41491M
libedit	3.0	2713181.41491M
libesmtplib	1.0.4	14.fc14
libevent	2.0.21	4.fc14
libffi	3.0.9	1.fc13
libgcc	4.5.1	4.fc14
libgcrypt	1.4.5	4.fc13
libgpg-error	1.9	1.fc14
libgssglue	0.1	8.fc12
libicu	4.4.1	6.fc14
libidn	1.18	1.fc14
libjpeg-turbo	1.1.1	1.fc14
libmount	2.18	4.8.fc14
libnet	1.1.6	4.fc18
libnetfilter_conntrack	0.9.1	1.fc14
libnfnetlink	1.0.0	1.fc13
libnih	1.0.2	2.fc14
libnl	1.1	14.fc14
libpcap	1.4.0	Ar2713181.41491M
libpciaccess	0.12.0	1.fc14
libselinux	2.0.96	6.fc14.1
libsepol	2.0.41	3.fc14
libss	1.41.12	6.fc14
libssh2	1.2.4	1.fc14
libstdc++	4.5.1	4.fc14
libtac	2.1.0	2713877.41491M
libtacutils	2.1.0	2713877.41491M
libtasn1	2.7	1.fc14
libtirpc	0.2.1	4.fc14
libudev	167	8.fc14
libusb	0.1.12	23.fc14
libuser	0.56.18	3.fc14
libutempter	1.1.5	4.fc12
libuuid	2.18	4.8.fc14

		arista-7010.txt
libvirt	0.8.3	99.Ar.2713680.41491M
libvirt-client	0.8.3	99.Ar.2713680.41491M
libvirt-python	0.8.3	99.Ar.2713680.41491M
libxml2	2.7.7	3.fc14
libzip	0.9.3	2.fc13
linux-atm-libs	2.5.1	1.fc14
logrotate	3.7.9	4.fc14
lrzsz	0.12.20	27.fc12
lsof	4.83	2.fc14
lua	5.1.4	7.fc14
lzo	2.03	3.fc12
lzop	1.03	2.fc14
m2crypto	0.20.2	9.fc14
mcelog	1.0	0.3.6e4e2a00.fc14
mingetty	1.08	6.fc14
module-init-tools	3.11.1	6.fc14
nano	2.2.4	1.fc14
nc	1.100	2.fc14
ncurses	5.7	9.20100703.fc14
ncurses-base	5.7	9.20100703.fc14
ncurses-libs	5.7	9.20100703.fc14
ndisc6	2011.10.17.d6f66139cd84	2.fc14
net-snmp	5.7.2	2713680.41491M
net-snmp-libs	5.7.2	2713680.41491M
net-snmp-utils	5.7.2	2713680.41491M
net-tools	1.60	105.fc14.1
netns	1.0.0	2713680.41491M
newt	0.52.12	1.fc14
newt-python	0.52.12	1.fc14
nfs-utils	1.2.3	6.fc14
nfs-utils-lib	1.1.5	3.fc14
nginx	1.6.2	2713680.41491M
nspr	4.8.8	1.fc14
nss	3.12.10	1.fc14
nss-softokn	3.12.10	1.fc14
nss-softokn-freebl	3.12.10	1.fc14
nss-sysinit	3.12.10	1.fc14
nss-util	3.12.10	1.fc14
nsutil	1.0.0	2713181.41491M
ntp-ude1	4.2.6p3	0.1.rc10.fc14
ntpdate	4.2.6p3	0.1.rc10.fc14
omi	1.0.7	2713181.41491M
openldap	2.4.23	4.fc14
openssh	5.5p1	2713181.41491M
openssh-clients	5.5p1	2713181.41491M
openssh-server	5.5p1	2713181.41491M
openssl	1.0.0e.Ar	2713181.41491M
openvswitch	2.1.0.Ar	2713181.41491M
pam	1.1.1	6.fc14
parted	2.3	4.fc14
passwd	0.78	1.fc14
pax	3.4	10.fc12
pciutils	3.1.7	3.fc14
pciutils-libs	3.1.7	3.fc14
pcre	8.10	1.fc14
pinentry	0.8.1	4.fc14
pkgconfig	0.25	2.fc14
plx-pcie-drivers	1.0.0	2714297.41491M
popt	1.13	7.fc14
ppp	2.4.5	12.fc14
procmail	3.22	25.fc12
procps	3.2.8	2713181.41491M
protobuf	2.3.0	5.fc14

protobuf-python	2.3.0	arista-7010.txt
psmisc	22.13	5.fc14
pth	2.0.7	6.fc14
ptpd	1.rc1	9
pygpgme	0.1	2713181.41491M
pylibpcap	0.5.1	21.20101027bZR69.fc14
pyserial	2.5	2713680.41491M
python	2.7	1.fc14
python-cjson	1.0.5.Ar	2713680.41491M
python-eunuchs	20070925.Ar.1	2713680.41491M
python-imaging	1.1.7	2713680.41491M
python-iniparse	0.4	2.fc14
python-libs	2.7	2713680.41491M
python-pip	1.5.2	2713181.41491M
python-ply	3.3	3.fc14
python-pycurl	7.19.0	7.fc14
python-requests	1.2.3	2713181.41491M
python-setuptools	0.6.14	3.fc14
python-simplejson	2.1.6	1.fc14.1
python-sleekxmpp	1.2.0.Ar	2713680.41491M
python-urlgrabber	3.9.1	7.fc14
qemu	1.4.0	2713181.41491M
readline	6.1	2.fc14
rpcbind	0.2.0	8.fc14
rpm	4.8.1	5.fc14
rpm-libs	4.8.1	5.fc14
rpm-python	4.8.1	5.fc14
rsync	3.0.8	1.fc14
rsyslog	5.6.4	3.fc14
sand-dma	1.0.1	2714297.41491M
scd-driver	2.0.0.Ar	2713680.41491M
scd-em	1.0.0.Ar	2713680.41491M
sed	4.2.1	6.fc14
setup	2.8.28	1.fc14
shadow-utils	4.1.4.2	11.fc14
shared-mime-info	0.80	1.fc14
slang	2.2.3	1.fc14
sqlite	3.6.23.1	1.fc14
squashfs-tools	4.2.Ar	2713181.41491M
strace	4.6	1.fc14
strata-dma	1.0.0	2714873.41491M
sudo	1.7.4p5	2713181.41491M
symlinks	1.4	2.fc13
sysvinit-tools	2.87	2713181.41491M
tar	1.23	9.fc14
tcp_wrappers-libs	7.6	59.fc14
tcpdump	4.4.0.Ar	1.fc14
telnet	0.17.Ar	2713181.41491M
telnet-server	0.17.Ar	2713181.41491M
tftp	0.49	7.fc14
time	1.7	38.fc14
tmpwatch	2.10	1.fc14
traceroute	2.0.18	1.fc14
ttcp	1.12	20.fc12
tzdata	2011i	1.fc14
uart-verilog	1.0.0.Ar	2713680.41491M
unzip	6.0	3.fc14
upstart	1.2	2.fc14
upstart-sysvinit	1.2	2.fc14
usbutils	0.90	1.fc14
usermode	1.106.1	1.fc14.1
util-linux-ng	2.18	4.8.fc14
uwsgi	2.0.2	2713680.41491M

```

                                arista-7010.txt
vconfig                        1.9                        8.fc12
vim-minimal                    7.3.056                   1.fc14
wget                           1.12                       4.fc14
which                          2.19                       5.fc12
xinetd                         2.3.14                     34.fc14
xz                             4.999.9                    0.2.beta.20100401git.fc14
xz-libs                        4.999.9                    0.2.beta.20100401git.fc14
yum                            3.2.29                     9.fc15
yum-metadata-parser            1.1.4                      2.fc14
zile                           2.3.17                     1.fc14
zip                            3.0                        2.fc14
zlib                           1.2.5                      2.fc14

```

Component	Version
About	About-norcal4-4.0.4-2086886
scd	0x65

```

localhost#
localhost#
localhost#
localhost#config
localhost(config)#snmp-server user tech-1 tech-sup v3
localhost(config)#exit
localhost#show snmp
Chassis: HSH16130550
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
0 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
Access Control
  0 Users
  1 Groups
  0 Views
SNMP logging: disabled
SNMP agent enabled in VRFs: default
1 warnings
! Group "tech-sup" of user "tech-1" is not configured

```

arista-7010.txt

```

localhost#
localhost#
localhost#
localhost#show ip route
Codes: C - connected, S - static, K - kernel,
        O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1,
        E2 - OSPF external type 2, N1 - OSPF NSSA external type 1,
        N2 - OSPF NSSA external type2, B I - iBGP, B E - eBGP,
        R - RIP, I - ISIS, A B - BGP Aggregate, A O - OSPF Summary,
        NG - Nexthop Group Static Route

```

Gateway of last resort is not set

! IP routing not enabled

```

localhost#
localhost#
localhost#show ip igmp snooping
  Global IGMP Snooping configuration:
-----
IGMP snooping                : Enabled
Robustness variable          : 2
Report flooding               : Disabled

Vlan 1 :
-----
IGMP snooping                : Enabled
IGMPv2 immediate leave       : Enabled
Multicast router learning mode : pim-dvmrp
IGMP max group limit          : No limit set
Recent attempt to exceed limit : No
Report flooding               : Disabled
IGMP snooping pruning active  : False
Flooding traffic to VLAN      : True

```

```

localhost#
localhost#
localhost#
localhost#show interface ethernet 1
Ethernet1 is down, line protocol is down (notconnect)
  Hardware is Ethernet, address is 444c.a88f.f7fa (bia 444c.a88f.f7fa)

```

arista-7010.txt

```

Ethernet MTU 9214 bytes
Auto-duplex, Auto-speed, auto negotiation: on, uni-link: unknown
Down 35 seconds
2 link status changes since last clear
Last clearing of "show interface" counters never
5 minutes input rate 0 bps (- with framing overhead), 0 packets/sec
5 minutes output rate 0 bps (- with framing overhead), 0 packets/sec
  0 packets input, 0 bytes
  Received 0 broadcasts, 0 multicast
  0 runts, 0 giants
  0 input errors, 0 CRC, 0 alignment, 0 symbol, 0 input discards
  0 PAUSE input
  0 packets output, 0 bytes
  Sent 0 broadcasts, 0 multicast
  0 output errors, 0 collisions
  0 late collision, 0 deferred, 0 output discards
  0 PAUSE output

```

```

localhost#
localhost#
localhost#
localhost#config
localhost(config)#router ospf 2
! IP routing not enabled
localhost(config-router-ospf)#network 10.0.0.0 0.255.255.255 area 0
localhost(config-router-ospf)#router-id 10.0.0.1
localhost(config-router-ospf)#exit
localhost(config)#show ip ospf
Routing Process "ospf 2"
Maximum number of LSA allowed 12000
Threshold for warning message 75%
Ignore-time 5 minutes, reset-time 5 minutes
Ignore-count allowed 5, current 0

```

```

localhost(config)#
localhost(config)#
localhost(config)#
localhost(config)#show vlan 1

```

VLAN	Name	Status	Ports
1	default	active	

arista-7010.txt

```

localhost(config)#
localhost(config)#
localhost(config)#
localhost(config)#show vlan summary
Number of existing VLANs      : 1

```

```

localhost#
localhost#
localhost#
localhost#config
localhost(config)#interface Ethernet 1
localhost(config-if-Et1)#switchport port-security
localhost(config-if-Et1)#switchport port-security maximum 2
localhost(config-if-Et1)#exit
localhost(config)#show port-security
Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action
-----
Et1          2          0          0          Shutdown
Total Addresses in System: 0

```

```

localhost(config)#
localhost(config)#
localhost(config)#
localhost(config)#show spanning-tree
MST0
  Spanning tree enabled protocol mstp
  Root ID    Priority    32768
             Address     444c.a88f.f7f9
             This bridge is the root

  Bridge ID   Priority    32768 (priority 32768 sys-id-ext 0)
             Address     444c.a88f.f7f9
             Hello Time  2.000 sec  Max Age 20 sec  Forward Delay 15 sec

Interface    Role        State        Cost        Prio.Nbr Type
-----

```

```

localhost(config)#
localhost(config)#
localhost(config)#
localhost(config)#show spanning-tree vlan 1 detail
spanning tree instance for vlan 1

```

```
arista-7010.txt
MST0 is executing the mstp Spanning Tree protocol
Bridge Identifier has priority 32768, sysid 0, address 444c.a88f.f7f9
Configured hello time 2.000, max age 20, forward delay 15, transmit hold-count 6
We are the root of the spanning tree
```

arista-7554.txt

Abboot 3.0.3-1262453

Press Control-C now to enter Abboot shell

Booting flash:EOS-4.14.5.1F-SSU.swi

[9.601878] Starting new kernel

Switching rootfs

Welcome to Arista Networks EOS 4.14.5.1F-SSU

Mounting filesystems: [OK]

Starting udev: [OK]

Setting hostname localhost: [OK]

Entering non-interactive startup

Starting ProcMgr: [OK]

Starting EOS initialization stage 1: [OK]

ip6tables: Applying firewall rules: [OK]

iptables: Applying firewall rules: [OK]

iptables: Loading additional modules: nf_conntrack_tftp [OK]

Starting system logger: [OK]

Starting NorCal initialization: [OK]

Retrigger failed udev events[OK]

Starting isshd: [OK]

Starting mcelog daemon

Starting EOS initialization stage 2: [OK]

Starting Power On Self Test (POST): [OK]

Starting crond: [OK]

Completing EOS initialization (press ESC to skip): [OK]

Model: DCS-7500E-SUP

Serial Number: JPE14211632

System RAM: 16012348 kB

Flash Memory size: 3.4G

May 31 18:02:25 localhost ElectionMgr: %REDUNDANCY-2-OTHER_DISABLED: Other supervisor became disabled

localhost login: admin

localhost(s1)>show version

Arista DCS-7554-CH

Hardware version: 02.01

Serial number: HSH14525015

System MAC address: 001c.7374.c093

Software image version: 4.14.5.1F-SSU

Architecture: i386

Internal build version: 4.14.5.1F-SSU-2384023.EOS41451FSSU

Internal build ID: 11a6d19e-4978-481d-abfc-968034d5b2d1

Uptime: 1 minute

Total memory: 16012348 kB

Free memory: 13515668 kB

localhost(s1)>

localhost(s1)>

localhost(s1)>

localhost(s1)>

localhost(s1)>show version

Arista DCS-7554-CH

Hardware version: 02.01

Serial number: HSH14525015

System MAC address: 001c.7374.c093

arista-7554.txt

Software image version: 4.14.5.1F-SSU
 Architecture: i386
 Internal build version: 4.14.5.1F-SSU-2384023.EOS41451FSSU
 Internal build ID: 11a6d19e-4978-481d-abfc-968034d5b2d1

Uptime: 19 minutes
 Total memory: 16012348 kB
 Free memory: 12602500 kB

localhost(s1)#
 localhost(s1)#
 localhost(s1)#
 localhost(s1)#
 localhost(s1)#
 localhost(s1)#show version detail
 Arista DCS-7554-CH
 Hardware version: 02.01
 Serial number: HSH14525015
 System MAC address: 001c.7374.c093

Software image version: 4.14.5.1F-SSU
 Architecture: i386
 Internal build version: 4.14.5.1F-SSU-2384023.EOS41451FSSU
 Internal build ID: 11a6d19e-4978-481d-abfc-968034d5b2d1

Uptime: 27 minutes
 Total memory: 16012348 kB
 Free memory: 12600392 kB

Installed software packages:

Package	Version	Release
Aaa	1.0.1	2384023.EOS41451FSSU
Aaa-cli	1.0.1	2384023.EOS41451FSSU
Aaa-lib	1.0.1	2384023.EOS41451FSSU
Aboot-utils	1.0.1	2384023.EOS41451FSSU
ACL	1.0.1	2384023.EOS41451FSSU
ACL-cli	1.0.1	2384023.EOS41451FSSU
ACL-lib	1.0.1	2384023.EOS41451FSSU
ACLSnmp	1.0.0	2384023.EOS41451FSSU
Adt7462	1.0.2	2384023.EOS41451FSSU
Adt7462-lib	1.0.2	2384023.EOS41451FSSU
Adt7483	1.0.1	2384023.EOS41451FSSU
Adt7483-lib	1.0.1	2384023.EOS41451FSSU
Agent	1.0.0	2384023.EOS41451FSSU
AgentMonitor	1.0.1	2384023.EOS41451FSSU
AgentMonitor-cli	1.0.1	2384023.EOS41451FSSU
AgentMonitor-lib	1.0.1	2384023.EOS41451FSSU
Alc	1.0.0	2384023.EOS41451FSSU
AlcCounters	1.0.0	2384023.EOS41451FSSU
AlcFlow	1.0.0	2384023.EOS41451FSSU
AlcVxlan	1.0.0	2384023.EOS41451FSSU
AltaLanz	1.0.0	2384023.EOS41451FSSU
Altera	1.0.2	2384023.EOS41451FSSU
Aom	1.0.0	2384023.EOS41451FSSU
Aom-lib	1.0.0	2384023.EOS41451FSSU
ArPyUtils	1.0.0	2383986.EOS41451FSSU
Arad	1.0.0	2384023.EOS41451FSSU
Arbus	2.1.0	2384023.EOS41451FSSU

		arista-7554.txt
Arbus-lib	2.1.0	2384023.EOS41451FSSU
Aresolve	1.0.1	2384023.EOS41451FSSU
Ark	1.0.2	2384023.EOS41451FSSU
Arnet	2.1.2	2384023.EOS41451FSSU
Arnet-cli	2.1.2	2384023.EOS41451FSSU
Arnet-lib	2.1.2	2384023.EOS41451FSSU
Arp	1.0.1	2384023.EOS41451FSSU
Arp-cli	1.0.1	2384023.EOS41451FSSU
Arp-lib	1.0.1	2384023.EOS41451FSSU
Arsys	1.5.2	2384023.EOS41451FSSU
Arsys-cli	1.5.2	2384023.EOS41451FSSU
Arsys-lib	1.5.2	2384023.EOS41451FSSU
Arsys-modular	1.5.2	2384023.EOS41451FSSU
Arsys-modular-lib	1.5.2	2384023.EOS41451FSSU
Artist	1.0.1	2384023.EOS41451FSSU
Artist-lib	1.0.1	2384023.EOS41451FSSU
AsicPktTestLib	1.0.0	2384023.EOS41451FSSU
AsicUtils	1.0.0	2384023.EOS41451FSSU
Asu	1.0.2	2384023.EOS41451FSSU
Asu-cli	1.0.2	2384023.EOS41451FSSU
Asu-lib	1.0.2	2384023.EOS41451FSSU
BcmDmaAbort	1.0.0	2384023.EOS41451FSSU
BcmDmaAbort-lib	1.0.0	2384023.EOS41451FSSU
BcmMdio-lib	1.0.0	2384023.EOS41451FSSU
Bfd	1.0.1	2384023.EOS41451FSSU
Bfd-cli	1.0.1	2384023.EOS41451FSSU
Bfd-lib	1.0.1	2384023.EOS41451FSSU
BfdTest	1.0.0	2384023.EOS41451FSSU
Bgp	1.0.0	2384023.EOS41451FSSU
Bodega	1.0.0	2384023.EOS41451FSSU
Bodega-diags	1.0.0	2384023.EOS41451FSSU
Bodega-firmware	1.0.0	2384023.EOS41451FSSU
Bodega-plugins	1.0.0	2384023.EOS41451FSSU
Brad	1.0.1	2384023.EOS41451FSSU
Capi	1.0.1	2384023.EOS41451FSSU
Capi-cli	1.0.1	2384023.EOS41451FSSU
Capi-lib	1.0.1	2384023.EOS41451FSSU
Cdp	1.0.1	2384023.EOS41451FSSU
Cdp-lib	1.0.1	2384023.EOS41451FSSU
Ch1822X	1.0.1	2384023.EOS41451FSSU
Ch1822X-lib	1.0.1	2384023.EOS41451FSSU
Cli	1.13.2	2384023.EOS41451FSSU
Cli-lib	1.13.2	2384023.EOS41451FSSU
CliMode	1.0.0	2384023.EOS41451FSSU
CliSession	1.0.1	2384023.EOS41451FSSU
CliSession-lib	1.0.1	2384023.EOS41451FSSU
ConfigSession	1.0.0	2384023.EOS41451FSSU
ConfigSession-cli	1.0.0	2384023.EOS41451FSSU
ControllerCommon	1.0.0	2384023.EOS41451FSSU
ControllerCommon-lib	1.0.0	2384023.EOS41451FSSU
ControllerDebug	1.0.0	2384023.EOS41451FSSU
ControllerDebug-cli	1.0.0	2384023.EOS41451FSSU
ControllerDebug-lib	1.0.0	2384023.EOS41451FSSU
ControllerRegistration	1.0.0	2384023.EOS41451FSSU
ControllerRegistration-cli	1.0.0	2384023.EOS41451FSSU
ControllerRegistration-lib	1.0.0	2384023.EOS41451FSSU
Controllerdb	1.0.0	2384023.EOS41451FSSU
Controllerdb-cli	1.0.0	2384023.EOS41451FSSU
Controllerdb-lib	1.0.0	2384023.EOS41451FSSU
Cpld	1.0.0	2384023.EOS41451FSSU
CpuComplex	1.0.1	2384023.EOS41451FSSU
CpuFabric	1.0.1	2384023.EOS41451FSSU
Dcb	1.0.0	2384023.EOS41451FSSU

		arista-7554.txt
Debug	1.0.1	2384023.EOS41451FSSU
DeltaPower	1.0.0	2384023.EOS41451FSSU
DhcpRelay	2.0.0	2384023.EOS41451FSSU
DhcpRelay-cli	2.0.0	2384023.EOS41451FSSU
DhcpRelay-lib	2.0.0	2384023.EOS41451FSSU
Diags	2.2.3	2384023.EOS41451FSSU
Diags-cli	2.2.3	2384023.EOS41451FSSU
Diags-lib	2.2.3	2384023.EOS41451FSSU
DiagsTools	1.0.1	2384023.EOS41451FSSU
DiagsTools-lib	1.0.1	2384023.EOS41451FSSU
DirectFlow	1.0.0	2384023.EOS41451FSSU
Dos	1.0.1	2384023.EOS41451FSSU
Dos-lib	1.0.1	2384023.EOS41451FSSU
DosBroadcom	1.0.0	2384023.EOS41451FSSU
DosFocalPoint	1.0.0	2384023.EOS41451FSSU
DosSystem	1.0.1	2384023.EOS41451FSSU
Dot1x	1.0.0	2384023.EOS41451FSSU
Dot1x-cli	1.0.0	2384023.EOS41451FSSU
Dot1x-lib	1.0.0	2384023.EOS41451FSSU
Ds125Br	1.0.1	2384023.EOS41451FSSU
Ds125Br-lib	1.0.1	2384023.EOS41451FSSU
Ebra	2.0.6	2384023.EOS41451FSSU
Ebra-cli	2.0.6	2384023.EOS41451FSSU
Ebra-lib	2.0.6	2384023.EOS41451FSSU
EbraSnmpp	1.0.1	2384023.EOS41451FSSU
EbraSnmpp-cli	1.0.1	2384023.EOS41451FSSU
EbraSnmpp-lib	1.0.1	2384023.EOS41451FSSU
EmersonPower	1.1.1	2384023.EOS41451FSSU
EntityMib	1.0.1	2384023.EOS41451FSSU
Environment	1.1.0	2384023.EOS41451FSSU
Eos	4.14.4	2384023.EOS41451FSSU
Eos-initscripts	9.20.2	2383986.EOS41451FSSU
Eos-release	4.14.3	2383986.EOS41451FSSU
Eos-udev	167	8.fc14
EosInit	1.0.1	2384023.EOS41451FSSU
EosInit-cli	1.0.1	2384023.EOS41451FSSU
EosInit-lib	1.0.1	2384023.EOS41451FSSU
EosKernel	3.4.43.Ar	2383986.EOS41451FSSU
EosUtils	1.1.0	2384023.EOS41451FSSU
EthIntf	1.0.1	2384023.EOS41451FSSU
EthIntf-cli	1.0.1	2384023.EOS41451FSSU
EthIntfSnmpp	1.0.0	2384023.EOS41451FSSU
EventMgr	1.0.1	2384023.EOS41451FSSU
EventMgr-cli	1.0.1	2384023.EOS41451FSSU
EventMgr-lib	1.0.1	2384023.EOS41451FSSU
EventMon	1.0.1	2384023.EOS41451FSSU
EventMon-cli	1.0.1	2384023.EOS41451FSSU
EventMon-lib	1.0.1	2384023.EOS41451FSSU
ExtEntity	1.0.0	2384023.EOS41451FSSU
ExtensionMgr	1.0.1	2384023.EOS41451FSSU
ExtensionMgr-cli	1.0.1	2384023.EOS41451FSSU
FastServerFailover	1.0.1	2384023.EOS41451FSSU
FastServerFailover-cli	1.0.1	2384023.EOS41451FSSU
FastServerFailover-lib	1.0.1	2384023.EOS41451FSSU
FaultInjection	1.0.1	2384023.EOS41451FSSU
FaultInjection-cli	1.0.1	2384023.EOS41451FSSU
Fhrp	1.0.1	2384023.EOS41451FSSU
Fhrp-cli	1.0.1	2384023.EOS41451FSSU
Fhrp-lib	1.0.1	2384023.EOS41451FSSU
FhrpSnmpp	1.1.0	2384023.EOS41451FSSU
FhrpSnmpp-lib	1.1.0	2384023.EOS41451FSSU
FileCli	1.0.0	2384023.EOS41451FSSU
FileCli-lib	1.0.0	2384023.EOS41451FSSU

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FileSystems	1.0.0	2384023.EOS41451FSSU
FmApi	1.1.1	2384023.EOS41451FSSU
FocalPointV2	1.0.1	2384023.EOS41451FSSU
Fru	2.5.2	2384023.EOS41451FSSU
Fru-cli	2.5.2	2384023.EOS41451FSSU
Fru-lib	2.5.2	2384023.EOS41451FSSU
Fru-util	2.5.2	2384023.EOS41451FSSU
FruSnmp	1.0.0	2384023.EOS41451FSSU
GatedSnmp	1.0.0	2384023.EOS41451FSSU
Gmp	1.0.1	2384023.EOS41451FSSU
Gmp-IgmpHost	1.0.1	2384023.EOS41451FSSU
Gmp-cli	1.0.1	2384023.EOS41451FSSU
Gn2405	1.0.1	2384023.EOS41451FSSU
HadoopTracer	1.0.0	2384023.EOS41451FSSU
Hardware	1.0.1	2384023.EOS41451FSSU
Hardware-cli	1.0.1	2384023.EOS41451FSSU
HostResourcesMib	1.0.1	2384023.EOS41451FSSU
Hsc	1.0.1	2384023.EOS41451FSSU
Hsc-cli	1.0.1	2384023.EOS41451FSSU
Igmp	1.0.1	2384023.EOS41451FSSU
Igmp-cli	1.0.1	2384023.EOS41451FSSU
Igmp-lib	1.0.1	2384023.EOS41451FSSU
IgmpHostProxy	1.0.1	2384023.EOS41451FSSU
IgmpHostProxy-cli	1.0.1	2384023.EOS41451FSSU
IgmpSnmp	1.0.0	2384023.EOS41451FSSU
IgmpSnooping	1.0.1	2384023.EOS41451FSSU
IgmpSnooping-cli	1.0.1	2384023.EOS41451FSSU
IgmpSnooping-lib	1.0.1	2384023.EOS41451FSSU
Inphi	1.0.0	2384023.EOS41451FSSU
Intf	1.2.1	2384023.EOS41451FSSU
Intf-cli	1.2.1	2384023.EOS41451FSSU
IntfSnmp	1.0.1	2384023.EOS41451FSSU
IntfSnmp-cli	1.0.1	2384023.EOS41451FSSU
IntfSnmp-lib	1.0.1	2384023.EOS41451FSSU
IpEth-cli	1.0.2	2384023.EOS41451FSSU
IpEthTest	1.0.0	2384023.EOS41451FSSU
Ipv6NeighborDiscovery	1.0.1	2384023.EOS41451FSSU
Ipv6NeighborDiscovery-cli	1.0.1	2384023.EOS41451FSSU
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Ira	1.12.6	2384023.EOS41451FSSU
Ira-cli	1.12.6	2384023.EOS41451FSSU
Ira-lib	1.12.6	2384023.EOS41451FSSU
IraAcl	1.0.0	2384023.EOS41451FSSU
IraAcl-lib	1.0.0	2384023.EOS41451FSSU
IraSnmp	1.0.1	2384023.EOS41451FSSU
Isis	1.0.1	2384023.EOS41451FSSU
Isis-cli	1.0.1	2384023.EOS41451FSSU
Jtag	1.0.1	2384023.EOS41451FSSU
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KernelFib	1.0.0	2384023.EOS41451FSSU
KernelMfib	1.0.0	2384023.EOS41451FSSU
Lag	2.0.1	2384023.EOS41451FSSU
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LagSnmp	1.0.0	2384023.EOS41451FSSU
Lanz	1.0.0	2384023.EOS41451FSSU
Lanz-cli	1.0.0	2384023.EOS41451FSSU
Lattice	1.0.1	2384023.EOS41451FSSU
Launcher	1.3.3	2384023.EOS41451FSSU
Launcher-cli	1.3.3	2384023.EOS41451FSSU
Launcher-lib	1.3.3	2384023.EOS41451FSSU
Lldp	1.0.0	2384023.EOS41451FSSU
Lm73	1.0.2	2384023.EOS41451FSSU

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Lm95234	1.0.1	2384023.EOS41451FSSU
LogMgr	1.2.0	2384023.EOS41451FSSU
LogMgr-cli	1.2.0	2384023.EOS41451FSSU
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MacMon	1.0.0	2384023.EOS41451FSSU
MacMon-cli	1.0.0	2384023.EOS41451FSSU
MacMon-lib	1.0.0	2384023.EOS41451FSSU
MacPhyConc	1.0.1	2384023.EOS41451FSSU
MacPhyConc-cli	1.0.1	2384023.EOS41451FSSU
Max6658	1.0.1	2384023.EOS41451FSSU
Max6697	1.0.1	2384023.EOS41451FSSU
McastBoundary	1.0.0	2384023.EOS41451FSSU
McastBoundary-cli	1.0.0	2384023.EOS41451FSSU
Mcp55	1.0.1	2384023.EOS41451FSSU
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Mendocino-firmware	1.0.0	2384023.EOS41451FSSU
Mendocino-plugins	1.0.0	2384023.EOS41451FSSU
MgmtSecurity	1.0.1	2384023.EOS41451FSSU
MgmtSecurity-cli	1.0.1	2384023.EOS41451FSSU
Mirroring	1.0.1	2384023.EOS41451FSSU
Mirroring-cli	1.0.1	2384023.EOS41451FSSU
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Mroute	1.0.1	2384023.EOS41451FSSU
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Nat	1.0.0	2384023.EOS41451FSSU
NetworkTools	1.0.2	2384023.EOS41451FSSU
NetworkTools-cli	1.0.2	2384023.EOS41451FSSU
NorCal	2.4.1	2384023.EOS41451FSSU
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NorCalCard	1.0.0	2384023.EOS41451FSSU
NorCalSys	1.2.0	2384023.EOS41451FSSU
Ntp	1.3.2	2384023.EOS41451FSSU
Ntp-cli	1.3.2	2384023.EOS41451FSSU
ObjectTracking	1.0.1	2384023.EOS41451FSSU
ObjectTracking-cli	1.0.1	2384023.EOS41451FSSU
ObjectTracking-lib	1.0.1	2384023.EOS41451FSSU
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Ospf3	1.0.0	2384023.EOS41451FSSU
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Pca9555	1.0.1	2384023.EOS41451FSSU
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PciBus	1.0.1	2384023.EOS41451FSSU

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PciBus-cli	1.0.1	2384023.EOS41451FSSU
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Petra	1.0.0	2384023.EOS41451FSSU
Petra-debug	1.0.0	2384023.EOS41451FSSU
PhyAeluros	2.2.0	2384023.EOS41451FSSU
PhyAeluros-cli	2.2.0	2384023.EOS41451FSSU
PhyAeluros-firmware	2.2.0	2384023.EOS41451FSSU
PhyAeluros-lib	2.2.0	2384023.EOS41451FSSU
PhyBcm	1.0.1	2384023.EOS41451FSSU
PhyBcm54980	1.0.1	2384023.EOS41451FSSU
PhyBcm54980-cli	1.0.1	2384023.EOS41451FSSU
PhyBcm54980-lib	1.0.1	2384023.EOS41451FSSU
PhyEee	1.1.1	2384023.EOS41451FSSU
PhyEee-cli	1.1.1	2384023.EOS41451FSSU
PhyEthtool	2.6.1	2384023.EOS41451FSSU
PhyEthtool-lib	2.6.1	2384023.EOS41451FSSU
PhyTn	1.0.1	2384023.EOS41451FSSU
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PhyTn-firmware	1.0.1	2384023.EOS41451FSSU
PhyTn-lib	1.0.1	2384023.EOS41451FSSU
Picasso	1.0.1	2384023.EOS41451FSSU
Picasso-lib	1.0.1	2384023.EOS41451FSSU
Pim	2.0.1	2384023.EOS41451FSSU
Pim-cli	2.0.1	2384023.EOS41451FSSU
PimBsr	1.0.0	2384023.EOS41451FSSU
PimBsr-cli	1.0.0	2384023.EOS41451FSSU
PimReg	1.0.0	2384023.EOS41451FSSU
PimReg-cli	1.0.0	2384023.EOS41451FSSU
PimSnmp	1.0.0	2384023.EOS41451FSSU
Pimsm	1.0.0	2384023.EOS41451FSSU
Pimsm-cli	1.0.0	2384023.EOS41451FSSU
PlxPex8600	1.0.2	2384023.EOS41451FSSU
PlxPex8600-lib	1.0.2	2384023.EOS41451FSSU
Pmbus	1.0.1	2384023.EOS41451FSSU
Pmbus-cli	1.0.1	2384023.EOS41451FSSU
Pmbus-lib	1.0.1	2384023.EOS41451FSSU
PolicyMap	1.0.0	2384023.EOS41451FSSU
Power	1.5.1	2384023.EOS41451FSSU
Power-cli	1.5.1	2384023.EOS41451FSSU
Power-lib	1.5.1	2384023.EOS41451FSSU
PowerOne	1.0.1	2384023.EOS41451FSSU
PowerOne-lib	1.0.1	2384023.EOS41451FSSU
ProcMgr	1.7.1	2384023.EOS41451FSSU
Psmi	1.0.1	2384023.EOS41451FSSU
Psmi-cli	1.0.1	2384023.EOS41451FSSU
Psmi-lib	1.0.1	2384023.EOS41451FSSU
PsocFanController	1.0.1	2384023.EOS41451FSSU
PtReyes	1.0.0	2384023.EOS41451FSSU
PtReyes-firmware	1.0.0	2384023.EOS41451FSSU
PtReyes-plugins	1.0.0	2384023.EOS41451FSSU
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PtpTimeSync	1.0.0	2384023.EOS41451FSSU
PyWrappers	1.0.0	2383986.EOS41451FSSU
PyWrappers-dnsmasq	1.0.0	2383986.EOS41451FSSU
PyWrappers-eos-initscripts	1.0.0	2383986.EOS41451FSSU
PyWrappers-fuse-zip	1.0.0	2383986.EOS41451FSSU
PyWrappers-iptables	1.0.0	2383986.EOS41451FSSU
PyWrappers-iptables-ipv6	1.0.0	2383986.EOS41451FSSU
PyWrappers-iputils	1.0.0	2383986.EOS41451FSSU
PyWrappers-lftp	1.0.0	2383986.EOS41451FSSU
PyWrappers-net-snmp	1.0.0	2383986.EOS41451FSSU

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PyWrappers-net-snmp-utils 1.0.0	2383986.EOS41451FSSU
PyWrappers-ntp-udel 1.0.0	2383986.EOS41451FSSU
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PyWrappers-tcpdump 1.0.0	2383986.EOS41451FSSU
PyWrappers-telnet 1.0.0	2383986.EOS41451FSSU
PyWrappers-telnet-server 1.0.0	2383986.EOS41451FSSU
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PyWrappers-xinetd 1.0.0	2383986.EOS41451FSSU
Qos 1.0.0	2384023.EOS41451FSSU
QosSnmp 1.0.0	2384023.EOS41451FSSU
Radius 1.0.2	2384023.EOS41451FSSU
Radius-cli 1.0.2	2384023.EOS41451FSSU
ReachabilityMonitor 1.0.0	2384023.EOS41451FSSU
RedSup 1.7.5	2384023.EOS41451FSSU
RedSupSnmp 1.0.0	2384023.EOS41451FSSU
ReloadCause 1.0.0	2384023.EOS41451FSSU
ReloadCause-lib 1.0.0	2384023.EOS41451FSSU
Rib 2.0.3	2384023.EOS41451FSSU
Rib-cli 2.0.3	2384023.EOS41451FSSU
Rib-lib 2.0.3	2384023.EOS41451FSSU
Rip 1.0.1	2384023.EOS41451FSSU
Rip-cli 1.0.1	2384023.EOS41451FSSU
RouteMap 1.0.1	2384023.EOS41451FSSU
RouteMap-cli 1.0.1	2384023.EOS41451FSSU
Ruby 1.0.1	2384023.EOS41451FSSU
Ruby-cli 1.0.1	2384023.EOS41451FSSU
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Sand 1.0.4	2384023.EOS41451FSSU
SandAc1 1.0.2	2384023.EOS41451FSSU
SandCounters 1.0.0	2384023.EOS41451FSSU
SandCounters-lib 1.0.0	2384023.EOS41451FSSU
SandDanz 1.0.0	2384023.EOS41451FSSU
SandFabric 1.0.0	2384023.EOS41451FSSU
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SandLanz 1.0.0	2384023.EOS41451FSSU
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SandLib-lib 1.0.1	2384023.EOS41451FSSU
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SandTunnel 1.0.0	2384023.EOS41451FSSU
SandTunnel-cli 1.0.0	2384023.EOS41451FSSU
SandTunnel-lib 1.0.0	2384023.EOS41451FSSU
Sb820 1.0.1	2384023.EOS41451FSSU
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ScdEmUtils 1.0.0	2384023.EOS41451FSSU
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Sequoia-plugins 1.0.0	2384023.EOS41451FSSU
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Si5327 1.0.0	2384023.EOS41451FSSU
Smash 1.0.3	2384023.EOS41451FSSU
Snmp 1.2.1	2384023.EOS41451FSSU
Snmp-cli 1.2.1	2384023.EOS41451FSSU
Snmp-lib 1.2.1	2384023.EOS41451FSSU

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Sol	1.0.1	2384023.EOS41451FSSU
Sol-lib	1.0.1	2384023.EOS41451FSSU
StageMgr	1.0.1	2384023.EOS41451FSSU
StageMgr-lib	1.0.1	2384023.EOS41451FSSU
StandbyCpld	1.0.1	2384023.EOS41451FSSU
StorageDevices	1.0.1	2384023.EOS41451FSSU
StorageDevices-cli	1.0.1	2384023.EOS41451FSSU
StormControl	1.0.0	2384023.EOS41451FSSU
Stp	1.1.1	2384023.EOS41451FSSU
Stp-cli	1.1.1	2384023.EOS41451FSSU
Stp-lib	1.1.1	2384023.EOS41451FSSU
Strata	1.3.1	2384023.EOS41451FSSU
StrataApi	1.0.1	2384023.EOS41451FSSU
StrataCentral	1.3.1	2384023.EOS41451FSSU
StrataCentral-agent	1.3.1	2384023.EOS41451FSSU
StrataCommon	1.0.1	2384023.EOS41451FSSU
StrataCommon-lib	1.0.1	2384023.EOS41451FSSU
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StrataL3	1.0.0	2384023.EOS41451FSSU
StrataLag	1.0.1	2384023.EOS41451FSSU
StrataVlanTopo	1.0.0	2384023.EOS41451FSSU
Stratix	1.0.1	2384023.EOS41451FSSU
Stratix-cli	1.0.1	2384023.EOS41451FSSU
Stratix-lib	1.0.1	2384023.EOS41451FSSU
SuperServer	1.0.1	2384023.EOS41451FSSU
SysMgr	2.6.1	2384023.EOS41451FSSU
SysMgr-cli	2.6.1	2384023.EOS41451FSSU
SysMgr-lib	2.6.1	2384023.EOS41451FSSU
SysMgrSnmp	1.0.1	2384023.EOS41451FSSU
Sysdb	1.10.0	2384023.EOS41451FSSU
SysdbAgent	1.0.1	2384023.EOS41451FSSU
TacSmash	1.0.4	2384023.EOS41451FSSU
TacSmash-cli	1.0.4	2384023.EOS41451FSSU
Tacacs	1.0.1	2384023.EOS41451FSSU
Tacacs-cli	1.0.1	2384023.EOS41451FSSU
Tacacs-lib	1.0.1	2384023.EOS41451FSSU
TaccPyUtils	1.0.0	2383986.EOS41451FSSU
TapAggGui	1.0.0	2384023.EOS41451FSSU
ThermoMgr	1.7.1	2384023.EOS41451FSSU
ThermoMgr-cli	1.7.1	2384023.EOS41451FSSU
ThermoMgr-lib	1.7.1	2384023.EOS41451FSSU
Topology	1.0.1	2384023.EOS41451FSSU
Topology-cli	1.0.1	2384023.EOS41451FSSU
Topology-controller	1.0.1	2384023.EOS41451FSSU
Topology-controller-cli	1.0.1	2384023.EOS41451FSSU
Topology-lib	1.0.1	2384023.EOS41451FSSU
Tunnel	1.0.0	2384023.EOS41451FSSU
Ucd9012	1.0.1	2384023.EOS41451FSSU
Ucd9012-lib	1.0.1	2384023.EOS41451FSSU
Units	1.1.0	2384023.EOS41451FSSU
VirtualCable	1.0.1	2384023.EOS41451FSSU
VirtualCable-cli	1.0.1	2384023.EOS41451FSSU
Vm	1.0.1	2384023.EOS41451FSSU
Vm-cli	1.0.1	2384023.EOS41451FSSU
VmTracer	1.0.1	2384023.EOS41451FSSU
VmwareVI	1.0.1	2384023.EOS41451FSSU
Vrf	1.0.1	2384023.EOS41451FSSU
Vrm64	1.0.1	2384023.EOS41451FSSU
VrmIr	1.0.1	2384023.EOS41451FSSU
Vxlan	1.0.1	2384023.EOS41451FSSU
Vxlan-cli	1.0.1	2384023.EOS41451FSSU
VxlanController	1.0.1	2384023.EOS41451FSSU
VxlanController-cli	1.0.1	2384023.EOS41451FSSU

VxlanController-formatlib 1.0.1	arista-7554.txt
VxlanController-lib 1.0.1	2384023.EOS41451FSSU
VxlanTest 1.0.0	2384023.EOS41451FSSU
wbem 1.0.0	2384023.EOS41451FSSU
Xcvt 1.2.1	2384023.EOS41451FSSU
Xcvt-cli 1.2.1	2384023.EOS41451FSSU
XcvtCtrl 1.0.2	2384023.EOS41451FSSU
Xilinx 1.0.1	2384023.EOS41451FSSU
Xmpp 1.4.2	2384023.EOS41451FSSU
Xmpp-cli 1.4.2	2384023.EOS41451FSSU
Xmpp-lib 1.4.2	2384023.EOS41451FSSU
Yosemite 1.0.0	2384023.EOS41451FSSU
Yosemite-firmware 1.0.0	2384023.EOS41451FSSU
ZeroTouch 1.0.0	2384023.EOS41451FSSU
Zuma 1.0.1	2384023.EOS41451FSSU
Zuma-future 1.0.1	2384023.EOS41451FSSU
arista-bde 1.0.0	2384023.EOS41451FSSU
audit-libs 2.1.3	1.fc14
aufs2-util 1.git.Ar	2383986.EOS41451FSSU
authconfig 6.1.11	1.fc14
basesystem 10.0	3
bash 4.1.16Ar	4.fc14
bcmaccel 1.0.1	2384023.EOS41451FSSU
bind-libs 9.7.4	0.3.b1.fc14
bind-utils 9.7.4	0.3.b1.fc14
bridge-utils 1.2	9.fc13
bzip2 1.0.6	1.fc14.1
bzip2-libs 1.0.6	1.fc14.1
ca-certificates 2011.78	1.fc14
chkconfig 1.3.49	1.fc14
compat-gsoap 2.7.13	2.fc14.2383986.EOS41451FSSU
conntrack-tools 0.9.14	1.fc14
coreutils 8.5	7.fc14
coreutils-libs 8.5	7.fc14
cpio 2.11	2.fc14
cracklib 2.8.16	4.fc14
cracklib-dicts 2.8.16	4.fc14
cronie 1.4.8	2.fc14
cronie-anacron 1.4.8	2.fc14
crontabs 1.11	1.20101115git.fc14
curl 7.32.0	2384023.EOS41451FSSU
cyrus-sasl 2.1.23	12.fc14
cyrus-sasl-lib 2.1.23	12.fc14
cyrus-sasl-md5 2.1.23	12.fc14
db4 4.8.30	2.fc14
db4-utils 4.8.30	2.fc14
dbus-libs 1.4.0	3.fc14
device-mapper 1.02.63	2.fc14
device-mapper-libs 1.02.63	2.fc14
dhclient 4.2.0	2383986.EOS41451FSSU
diffutils 2.8.1	29.fc14
dmamem 1.0.1	2384023.EOS41451FSSU
dnsmasq 2.59	2383986.EOS41451FSSU
dosfstools 3.0.22	2.fc18
e2fsprogs 1.41.12	6.fc14
e2fsprogs-libs 1.41.12	6.fc14
ed 1.4	2.fc14
eject 2.1.5	20.fc14
elfutils-libelf 0.152	1.fc14
esmtop 1.0	6.fc12
ethtool 2.6.39	1.fc14
expat 2.0.1	10.fc13
file-libs 5.04	17.fc14

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filesystem	2.4.35	1.fc14
findutils	4.5.9	2.fc14
fipscheck	1.2.0	4.fc13
fipscheck-lib	1.2.0	4.fc13
fpdma	1.0.0.Ar	2384023.EOS41451FSSU
freeradius-client	1.1.6	2383986.EOS41451FSSU
freetype	2.4.2	5.fc14
fuse	2.8.5	5.fc14
fuse-libs	2.8.5	5.fc14
fuse-zip	0.2.11	1.fc13
gamin	0.1.10	8.fc14
gawk	3.1.8	3.fc14
gdb	7.2	51.fc14
gdb-gdbserver	7.2	51.fc14
gdbm	1.8.3	8.fc14
gdisk	0.7.2	1.fc14
glib2	2.26.0	2.fc14
glibc	2.13	2
glibc-common	2.13	2
gmp	4.3.1	7.fc14
gnupg2	2.0.16	3.fc14.1
gnutls	2.8.6	2.fc14
gpgme	1.2.0	3.fc14
grep	2.8	2.fc14
gzip	1.4	1.fc14
hardlink	1.0	9.fc12
hdparm	9.27	1.fc13
hostname	3.04	2.fc14
hwdata	0.232	1.fc14
i2c-tools	3.0.2	4.fc12
info	4.13a	13.fc14
inotify-tools	3.14	1.fc14
iperf	2.0.5.Ar	2383986.EOS41451FSSU
iproute	3.0.Ar	2383986.EOS41451FSSU
iptables	1.4.9	1.fc14
iptables-ipv6	1.4.9	1.fc14
iputils	20100418	3.fc14
jansson	1.2	1.fc13
jsonrpc-lib	1.0.0	2383986.EOS41451FSSU
kbfd	1.0.0.Ar	2383986.EOS41451FSSU
keyutils-libs	1.2	6.fc12
krb5-libs	1.8.4	2.fc14
kvm-kmod	2.6.38.8	2383986.EOS41451FSSU
lcms-libs	1.19	2.fc14
less	436	11.fc14
lftp	4.0.9	3.fc14
libacl	2.2.49	9.fc14
libassuan	2.0.0	2.fc14
libattr	2.4.44	6.fc14
libblkid	2.18	4.8.fc14
libbsd	0.2.0	3.fc13
libcap	2.22	1.fc14
libcap-ng	0.6.5	1.fc14
libcom_err	1.41.12	6.fc14
libcurl	7.32.0	2384023.EOS41451FSSU
libedit	3.0	2383986.EOS41451FSSU
libesmtplib	1.0.4	14.fc14
libevent	2.0.21	4.fc14
libffi	3.0.9	1.fc13
libgcc	4.5.1	4.fc14
libgcrypt	1.4.5	4.fc13
libgpg-error	1.9	1.fc14
libgssglue	0.1	8.fc12

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libc	4.4.1	6.fc14
libidn	1.18	1.fc14
libjpeg-turbo	1.1.1	1.fc14
libmount	2.18	4.8.fc14
libnet	1.1.6	4.fc18
libnetfilter_conntrack	0.9.1	1.fc14
libnfnetlink	1.0.0	1.fc13
libnih	1.0.2	2.fc14
libnl	1.1	14.fc14
libpcap	1.4.0	Ar2383986.EOS41451FSSU
libpciaccess	0.12.0	1.fc14
libselinux	2.0.96	6.fc14.1
libsepol	2.0.41	3.fc14
libss	1.41.12	6.fc14
libssh2	1.2.4	1.fc14
libstdc++	4.5.1	4.fc14
libtac	2.1.0	2384023.EOS41451FSSU
libtacutils	2.1.0	2384023.EOS41451FSSU
libtasn1	2.7	1.fc14
libtirpc	0.2.1	4.fc14
libudev	167	8.fc14
libusb	0.1.12	23.fc14
libuser	0.56.18	3.fc14
libutempter	1.1.5	4.fc12
libuuid	2.18	4.8.fc14
libvirt	0.8.3	99.Ar.2383986.EOS41451FSSU
libvirt-client	0.8.3	99.Ar.2383986.EOS41451FSSU
libvirt-python	0.8.3	99.Ar.2383986.EOS41451FSSU
libxml2	2.7.7	3.fc14
libzip	0.9.3	2.fc13
linux-atm-libs	2.5.1	1.fc14
logrotate	3.7.9	4.fc14
lrzsz	0.12.20	27.fc12
lsof	4.83	2.fc14
lua	5.1.4	7.fc14
lzo	2.03	3.fc12
lzop	1.03	2.fc14
m2crypto	0.20.2	9.fc14
mcelog	1.0	0.3.6e4e2a00.fc14
mingetty	1.08	6.fc14
module-init-tools	3.11.1	6.fc14
nano	2.2.4	1.fc14
nc	1.100	2.fc14
ncurses	5.7	9.20100703.fc14
ncurses-base	5.7	9.20100703.fc14
ncurses-libs	5.7	9.20100703.fc14
ndisc6	2011.10.17.d6f66139cd84	2.fc14
net-snmp	5.7.2	2383986.EOS41451FSSU
net-snmp-libs	5.7.2	2383986.EOS41451FSSU
net-snmp-utils	5.7.2	2383986.EOS41451FSSU
net-tools	1.60	105.fc14.1
netns	1.0.0	2383986.EOS41451FSSU
newt	0.52.12	1.fc14
newt-python	0.52.12	1.fc14
nfs-utils	1.2.3	6.fc14
nfs-utils-lib	1.1.5	3.fc14
nginx	1.6.2	2383986.EOS41451FSSU
nspr	4.8.8	1.fc14
nss	3.12.10	1.fc14
nss-softokn	3.12.10	1.fc14
nss-softokn-freebl	3.12.10	1.fc14
nss-sysinit	3.12.10	1.fc14
nss-util	3.12.10	1.fc14

nsutil	1.0.0	arista-7554.txt
ntp-udel	4.2.6p3	2383986.EOS41451FSSU
ntpdate	4.2.6p3	0.1.rc10.fc14
omi	1.0.7	0.1.rc10.fc14
openldap	2.4.23	2383986.EOS41451FSSU
openssh	5.5p1	4.fc14
openssh-clients	5.5p1	2383986.EOS41451FSSU
openssh-server	5.5p1	2383986.EOS41451FSSU
openssl	1.0.0e.Ar	2383986.EOS41451FSSU
openvswitch	2.1.0.Ar	2383986.EOS41451FSSU
pam	1.1.1	6.fc14
parted	2.3	4.fc14
passwd	0.78	1.fc14
pax	3.4	10.fc12
pciutils	3.1.7	3.fc14
pciutils-libs	3.1.7	3.fc14
pcre	8.10	1.fc14
pinentry	0.8.1	4.fc14
pkgconfig	0.25	2.fc14
plx-pcie-drivers	1.0.0	2384023.EOS41451FSSU
popt	1.13	7.fc14
ppp	2.4.5	12.fc14
procmail	3.22	25.fc12
procps	3.2.8	2383986.EOS41451FSSU
protobuf	2.3.0	5.fc14
protobuf-python	2.3.0	5.fc14
psmisc	22.13	6.fc14
pth	2.0.7	9
ptpd	1.rc1	2383986.EOS41451FSSU
pygpgme	0.1	21.20101027bZR69.fc14
pylibpcap	0.5.1	2383986.EOS41451FSSU
pyserial	2.5	1.fc14
python	2.7	2384023.EOS41451FSSU
python-cjson	1.0.5.Ar	2383986.EOS41451FSSU
python-eunuchs	20070925.Ar.1	2383986.EOS41451FSSU
python-imaging	1.1.7	2.fc14
python-iniparse	0.4	2.fc14
python-libs	2.7	2384023.EOS41451FSSU
python-pip	1.5.2	2383986.EOS41451FSSU
python-ply	3.3	3.fc14
python-pycurl	7.19.0	7.fc14
python-requests	1.2.3	2383986.EOS41451FSSU
python-setuptools	0.6.14	3.fc14
python-simplejson	2.1.6	1.fc14.1
python-sleekxmpp	1.2.0.Ar	2383986.EOS41451FSSU
python-urlgrabber	3.9.1	7.fc14
qemu	1.4.0	2383986.EOS41451FSSU
readline	6.1	2.fc14
rpcbind	0.2.0	8.fc14
rpm	4.8.1	5.fc14
rpm-libs	4.8.1	5.fc14
rpm-python	4.8.1	5.fc14
rsync	3.0.8	1.fc14
rsyslog	5.6.4	3.fc14
sand-dma	1.0.1	2384023.EOS41451FSSU
scd-driver	2.0.0.Ar	2383986.EOS41451FSSU
scd-em	1.0.0.Ar	2383986.EOS41451FSSU
sed	4.2.1	6.fc14
setup	2.8.28	1.fc14
shadow-utils	4.1.4.2	11.fc14
shared-mime-info	0.80	1.fc14
slang	2.2.3	1.fc14
sqlite	3.6.23.1	1.fc14

squashfs-tools	4.2.Ar	arista-7554.txt	2383986.EOS41451FSSU
strace	4.6		1.fc14
strata-dma	1.0.0		2384023.EOS41451FSSU
sudo	1.7.4p5		2383986.EOS41451FSSU
symlinks	1.4		2.fc13
sysvinit-tools	2.87		2383986.EOS41451FSSU
tar	1.23		9.fc14
tcp_wrappers-libs	7.6		59.fc14
tcpdump	4.4.0.Ar		1.fc14
telnet	0.17.Ar		2383986.EOS41451FSSU
telnet-server	0.17.Ar		2383986.EOS41451FSSU
tftp	0.49		7.fc14
time	1.7		38.fc14
tmpwatch	2.10		1.fc14
traceroute	2.0.18		1.fc14
ttcp	1.12		20.fc12
tzdata	2011i		1.fc14
uart-verilog	1.0.0.Ar		2383986.EOS41451FSSU
unzip	6.0		3.fc14
upstart	1.2		2.fc14
upstart-sysvinit	1.2		2.fc14
usbutils	0.90		1.fc14
usermode	1.106.1		1.fc14.1
util-linux-ng	2.18		4.8.fc14
uwsgi	2.0.2		2383986.EOS41451FSSU
vconfig	1.9		8.fc12
vim-minimal	7.3.056		1.fc14
wget	1.12		4.fc14
which	2.19		5.fc12
xinetd	2.3.14		34.fc14
xz	4.999.9		0.2.beta.20100401git.fc14
xz-libs	4.999.9		0.2.beta.20100401git.fc14
yum	3.2.29		9.fc15
yum-metadata-parser	1.1.4		2.fc14
zile	2.3.17		1.fc14
zip	3.0		2.fc14
zlib	1.2.5		2.fc14

Component	Version
Fabric1-Ucd9012	SFT0017502A0
Fabric2-Ucd9012	SFT0017502A0
Fabric3-Ucd9012	SFT0017502A0
Fabric4-Ucd9012	SFT0017502A0
Fabric5-Ucd9012	SFT0017502A0
Fabric6-Ucd9012	SFT0017502A0
Linecard3-Ucd9012	SFT002020601
Linecard3-Ucd9012	SFT002010601
Linecard3-Ucd9012	SFT002030601
Linecard3-scd	0x4
Linecard3-scd	0x4
Linecard3-scd	0x4
Supervisor1-Aboot	Aboot-norcal3-3.0.3-1262453
Supervisor1-Ucd9012	SFT002120110
Supervisor1-Ucd9012	SFT002110110
Supervisor1-scd	0x7

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```

localhost(s1)>
localhost(s1)>en
localhost(s1)#config
localhost(s1)(config)#snmp-server user tech-1 tech-sup v3
localhost(s1)(config)#exit
localhost(s1)#show snmp
Chassis: HSH14525015
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
0 SNMP packets output
  0 Too big errors
  0 No such name errors
  0 Bad value errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
Access Control
  0 Users
  1 Groups
  0 Views
SNMP logging: disabled
SNMP agent enabled in VRFs: default
1 warnings
! Group "tech-sup" of user "tech-1" is not configured

```

```

localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#show ip route
Codes: C - connected, S - static, K - kernel,
       O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1,
       E2 - OSPF external type 2, N1 - OSPF NSSA external type 1,
       N2 - OSPF NSSA external type2, B I - iBGP, B E - eBGP,
       R - RIP, I - ISIS, A B - BGP Aggregate, A O - OSPF Summary,
       NG - Nexthop Group Static Route

```

Gateway of last resort is not set

! IP routing not enabled

```

localhost(s1)#
localhost(s1)#

```

arista-7554.txt

```
localhost(s1)#
localhost(s1)#show ip igmp snooping
Global IGMP Snooping configuration:
```

```
-----
IGMP snooping           : Enabled
Robustness variable     : 2
Report flooding         : Disabled
```

```
Vlan 1 :
```

```
-----
IGMP snooping           : Enabled
IGMPv2 immediate leave  : Enabled
Multicast router learning mode : pim-dvmrp
IGMP max group limit     : No limit set
Recent attempt to exceed limit : No
Report flooding         : Disabled
IGMP snooping pruning active : False
Flooding traffic to VLAN : True
```

```
localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#show interfaces Ethernet 3/1/1
Ethernet3/1/1 is down, line protocol is down (notconnect)
  Hardware is Ethernet, address is 0000.0000.0000 (bia 001c.7348.6dac)
  Ethernet MTU 9214 bytes
  Unconfigured, Unconfigured, auto negotiation: off, uni-link: unknown
  0 link status changes since last clear
  Last clearing of "show interface" counters never
  5 minutes input rate 0 bps (- with framing overhead), 0 packets/sec
  5 minutes output rate 0 bps (- with framing overhead), 0 packets/sec
    0 packets input, 0 bytes
    Received 0 broadcasts, 0 multicast
    0 runts, 0 giants
    0 input errors, 0 CRC, 0 alignment, 0 symbol, 0 input discards
    0 PAUSE input
    0 packets output, 0 bytes
    Sent 0 broadcasts, 0 multicast
    0 output errors, 0 collisions
    0 late collision, 0 deferred, 0 output discards
    0 PAUSE output
```

```
localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#config
localhost(s1)(config)#router ospf 2
localhost(s1)(config-router-ospf)#network 10.0.0.0 0.255.255.255 area 0
```

```

arista-7554.txt
localhost(s1)(config-router-ospf)#router-id 10.0.0.1
localhost(s1)(config-router-ospf)#exit
localhost(s1)(config)#exit
localhost(s1)#show ip ospf
Routing Process "ospf 2"
Maximum number of LSA allowed 12000
Threshold for warning message 75%
Ignore-time 5 minutes, reset-time 5 minutes
Ignore-count allowed 5, current 0

```

```

localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#show vlan 1

```

VLAN	Name	Status	Ports
1	default	active	

```

localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#show vlan summary
Number of existing VLANs : 1

```

```

localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#config
localhost(s1)(config)#interface Ethernet 3/1/1
localhost(s1)(config-if-Et3/1/1)#switchport port-security
localhost(s1)(config-if-Et3/1/1)#switchport port-security maximum 2
localhost(s1)(config-if-Et3/1/1)#exit
localhost(s1)(config)#show port-security
Secure Port  MaxSecureAddr  CurrentAddr  SecurityViolation  Security Action
              (Count)         (Count)         (Count)
-----
Et3/1/1      2                0                0                Shutdown
-----
Total Addresses in System: 0

```

arista-7554.txt

```
localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#show spanning-tree
```

```
MST0
```

```
Spanning tree enabled protocol mstp
```

```
Root ID      Priority      32768
             Address      001c.7374.c093
             This bridge is the root
```

```
Bridge ID    Priority      32768 (priority 32768 sys-id-ext 0)
             Address      001c.7374.c093
             Hello Time  2.000 sec  Max Age 20 sec  Forward Delay 15 sec
```

Interface	Role	State	Cost	Prio.Nbr	Type
-----------	------	-------	------	----------	------

```
localhost(s1)#
localhost(s1)#
localhost(s1)#
localhost(s1)#show spanning-tree vlan 1 detail
```

```
Spanning tree instance for vlan 1
```

```
MST0 is executing the mstp Spanning Tree protocol
```

```
Bridge Identifier has priority 32768, sysid 0, address 001c.7374.c093
```

```
Configured hello time 2.000, max age 20, forward delay 15, transmit hold-count 6
We are the root of the spanning tree
```


cisco.txt

```

Switch>show ?
aaa          Show AAA values
adjacency    Adjacent nodes
arp          ARP table
auto         Show Automation Template
cca          CCA information
class-map    Show QoS Class Map
clock        Display the system clock
cns          CNS agents
controllers  Interface controller status
crypto       Encryption module
dampening    Display dampening information
diagnostic   Show command for diagnostic
dot1q-tunnel Display dot1q tunnel ports
dot1x        Dot1x information
eigrp        EIGRP show commands
env          Environmental facilities
epm          EPM information
errdisable   Error disable
etherchannel EtherChannel information
exception    exception informations
flash:       display information about flash: file system
flowcontrol  show flow control information
format       Show format information
history      Display the session command history
hosts        IP domain-name, lookup style, nameservers, and host table
idprom       show IDPROMs for interfaces
if-mgr       if-mgr information
inventory    Show the physical inventory
ip           IP information
ipc          Interprocess communications commands
ipv6         IPv6 information
kerberos     Show Kerberos Values
kron         Kron Subsystem
l2           Layer 2
l2protocol-tunnel Display L2PT status and configurations
lacp         Port channel information
link         Show Link
lldp         LLDP information
location     Display the system location
login        Display Secure Login Configurations and State
mab          MAB information
mac          MAC configuration
macro        Show command macros
memory       Memory statistics
mls          mls global commands
monitor      Monitoring different system events
network-policy Network Policy profile information
odm-format   Show the schema used for ODM input file
pagp         Port channel information
platform     platform specific show commands
pm           Show Port Manager commands
policy-map   Show QoS Policy Map
power        Switch Power
queue        Show queue contents
queueing     Show queueing configuration
radius       Shows radius information
resource     Resource group statistics
rmon         rmon statistics
sas1         show SASL information
sessions     Information about Telnet connections
shell        Display shell information
snmp         snmp statistics

```

cisco.txt

ssh	Status of SSH server connections
ssl	Show SSL command
storm-control	Show storm control configuration
table-map	Show Table Map
tacacs	Shows tacacs+ server statistics
template	Template information
terminal	Display terminal configuration parameters
time-range	Time range
udld	UDLD information
users	Display information about terminal lines
version	System hardware and software status
vlan	VTP VLAN status
vmps	VMPS version information
vrf	VPN Routing/Forwarding instance information
vstack	Vstack show commands
vtp	VTP information
xdr	Show details about XDR
xsd-format	Show the ODM XSD for the command

Switch>show interface ?

Async	Async interface
Auto-Template	Auto-Template interface
BVI	Bridge-Group Virtual Interface
CTunnel	CTunnel interface
Dialer	Dialer interface
FastEthernet	FastEthernet IEEE 802.3
Filter	Filter interface
Filtergroup	Filter Group interface
GigabitEthernet	GigabitEthernet IEEE 802.3z
GroupVI	Group Virtual interface
Loopback	Loopback interface
Null	Null interface
Port-channel	Ethernet Channel of interfaces
Portgroup	Portgroup interface
Pos-channel	POS Channel of interfaces
Tunnel	Tunnel interface
Vif	PGM Multicast Host interface
Virtual-Template	Virtual Template interface
Virtual-TokenRing	Virtual TokenRing
Vlan	Catalyst Vlans
accounting	Show interface accounting
capabilities	Show interface capabilities information
counters	Show interface counters
crb	Show interface routing/bridging info
dampening	Show interface dampening info
debounce	Show interface debounce time info
description	Show interface description
etherchannel	Show interface etherchannel information
fair-queue	Show interface Weighted Fair Queueing (WFQ) info
fcpa	Fiber Channel
flowcontrol	Show interface flowcontrol information
irb	Show interface routing/bridging info
mac-accounting	Show interface MAC accounting info
mpls-exp	Show interface MPLS experimental accounting info
mtu	Show interface mtu
precedence	Show interface precedence accounting info
private-vlan	Show interface private vlan information
pruning	Show interface trunk VTP pruning information
random-detect	Show interface Weighted Random Early Detection (WRED) info
rate-limit	Show interface rate-limit info
stats	Show interface packets & octets, in & out, by switching
path	
status	Show interface line status

```
                                cisco.txt
summary          Show interface summary
switchport       Show interface switchport information
transceiver      Show interface transceiver
trunk            Show interface trunk information
|               Output modifiers
<cr>
```

```
Switch>show interface Ethernet ?
% Unrecognized command
Switch>show interface Fast
Switch>show interface FastEthernet ?
  <0-0> FastEthernet interface number
```

```
Switch>show interface FastEthernet
```

cisco-4948.txt

```
*****
*
* Welcome to Rom Monitor for      WS-C4948E System
* Copyright (c) 2003-2013 by Cisco Systems, Inc.
* All rights reserved.
*
*****
```

Checking the partition table and boot sector...

Checking FAT, Files and Directories...

Reclaiming unused space...

Updating FAT...

Primary Rom Monitor Version 12.2(44r)SG12

CPU Rev: 2.1, Board Rev: 5, Board Type: 104, CPLD Hobgoblin Rev: 22

Chassis: WS-C4948E

Front Panel Phy is Bcm5482s

Got Mac Address: c4:64:13:42:ef:bf

MAC Address : c4-64-13-42-ef-bf

Ip Address : Not set.

Netmask : Not set.

Gateway : Not set.

TftpServer : Not set.

Peer supervisor not detected or is not running IOS

Supervisor uplinks and all linecards have been reset

***** The system will autoboot in 5 seconds *****

Type control-C to prevent autobooting.

.

***** The system will autoboot now *****

config-register = 0x2101

Autobooting using the first file from bootflash.....

Rommon reg: 0x00000780

Reset2Reg: 0x00009EFF

##

Fortoointe controller 0x0B593D4F..0x0B6D4D98 original size:0x001ABAC1

#####

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cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706

cisco-4948.txt

Cisco IOS Software, Catalyst 4500 L3 Switch Software (cat4500e-IPBASE-M), Version 12.2(54)SG1, RELEASE SOFTWARE (fc1)
Technical Support: <http://www.cisco.com/techsupport>
Copyright (c) 1986-2011 by Cisco Systems, Inc.
Compiled Thu 27-Jan-11 12:13 by prod_rel_team
Image text-base: 0x10000000, data-base: 0x12A709B8

cisco WS-C4948E (MPC8548) processor (revision 5) with 1048576K bytes of memory.
Processor board ID CAT1552S66E
MPC8548 CPU at 1GHz, Cisco Catalyst 4948E
Last reset from PowerUp
1 Virtual Ethernet interface
48 Gigabit Ethernet interfaces
4 Ten Gigabit Ethernet interfaces
511K bytes of non-volatile configuration memory.

•

Press RETURN to get started!

Switch>show version
Cisco IOS Software, Catalyst 4500 L3 Switch Software (cat4500e-IPBASE-M), Version 12.2(54)SG1, RELEASE SOFTWARE (fc1)
Technical Support: <http://www.cisco.com/techsupport>
Copyright (c) 1986-2011 by Cisco Systems, Inc.
Compiled Thu 27-Jan-11 12:13 by prod_rel_team
Image text-base: 0x10000000, data-base: 0x12A709B8

ROM: 12.2(44r)SG12
Hobgoblin Revision 22, Fortooin Revision 1.22

Switch uptime is 1 minute
System returned to ROM by power-on
System image file is "bootflash:cat4500e-ipbase-mz.122-54.SG1.bin"

cisco WS-C4948E (MPC8548) processor (revision 5) with 1048576K bytes of memory.
Processor board ID CAT1552S66E
MPC8548 CPU at 1GHz, Cisco Catalyst 4948E
Last reset from PowerUp
1 Virtual Ethernet interface
48 Gigabit Ethernet interfaces
4 Ten Gigabit Ethernet interfaces
511K bytes of non-volatile configuration memory.
Configuration register is 0x2101

cisco-4948.txt

```

Switch>
Switch>
Switch>
Switch>en
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#snmp-server user tech-1 tech-sup v3
Switch(config)#exit
Switch#show snmp
Chassis: CAT1552S66E
0 SNMP packets input
  0 Bad SNMP version errors
  0 Unknown community name
  0 Illegal operation for community name supplied
  0 Encoding errors
  0 Number of requested variables
  0 Number of altered variables
  0 Get-request PDUs
  0 Get-next PDUs
  0 Set-request PDUs
  0 Input queue packet drops (Maximum queue size 1000)
0 SNMP packets output
  0 Too big errors (Maximum packet size 1500)
  0 No such name errors
  0 Bad values errors
  0 General errors
  0 Response PDUs
  0 Trap PDUs
SNMP global trap: disabled
SNMP agent enabled

SNMP logging: disabled

```

```

Switch#
Switch#
Switch#
Switch#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

```

Gateway of last resort is not set

cisco-4948.txt

```
Switch#
Switch#
Switch#
Switch#show ip igmp snooping
Global IGMP Snooping configuration:
```

```
-----
IGMP snooping           : Enabled
IGMPv3 snooping         : Enabled
Report suppression      : Enabled
TCN solicit query       : Disabled
TCN flood query count   : 2
Last Member Query Interval : 1000
```

```
Vlan 1:
```

```
-----
IGMP snooping           : Enabled
CAPWAP enabled          : Disabled
IGMPv2 immediate leave  : Disabled
Explicit host tracking   : Enabled
Multicast router learning mode : pim-dvmrp
CGMP interoperability mode : IGMP_ONLY
Last Member Query Interval : 1000
```

```
Switch#
Switch#
Switch#
Switch#show interfaces FastEthernet 1
FastEthernet1 is down, line protocol is down
  Hardware is Fast Ethernet for out of band management, address is c464.1342.efbf
(bia c464.1342.efbf)
  Internet address is 10.1.1.35/24
  MTU 1500 bytes, BW 100000 kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Unknown duplex, Unknown Speed, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes
    Received 0 broadcasts (0 IP multicasts)
    0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog
    0 input packets with dribble condition detected
    0 packets output, 0 bytes, 0 underruns
```

```

                                cisco-4948.txt
0 output errors, 0 collisions, 2 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out

```

```

Switch#
Switch#
Switch#
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#router ospf 2
Switch(config-router)#network 10.0.0.0 255.0.0.0 area 0
Switch(config-router)#router-id 10.0.0.1
Switch(config-router)#exit
Switch(config)#exit
Switch#show ip ospf
Routing Process "ospf 2" with ID 10.0.0.1
Start time: 00:02:36.830, Time elapsed: 00:00:16.972
Supports only single TOS(TOS0) routes
Supports opaque LSA
Supports Link-local Signaling (LLS)
Supports area transit capability
Router is not originating router-LSAs with maximum metric
Initial SPF schedule delay 5000 msec
Minimum hold time between two consecutive SPF 10000 msec
Maximum wait time between two consecutive SPF 10000 msec
Incremental-SPF disabled
Minimum LSA interval 5 secs
Minimum LSA arrival 1000 msec
LSA group pacing timer 240 secs
Interface flood pacing timer 33 msec
Retransmission pacing timer 66 msec
Number of external LSA 0. Checksum Sum 0x000000
Number of opaque AS LSA 0. Checksum Sum 0x000000
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Number of areas transit capable is 0
External flood list length 0
IETF NSF helper support enabled
Cisco NSF helper support enabled
Reference bandwidth unit is 100 mbps
Area BACKBONE(0) (Inactive)
  Number of interfaces in this area is 0
  Area has no authentication
  SPF algorithm last executed 00:00:00.168 ago
  SPF algorithm executed 1 times
  Area ranges are
    Number of LSA 1. Checksum Sum 0x00B07C
    Number of opaque link LSA 0. Checksum Sum 0x000000
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0

```


cisco-4948.txt

```

Switch#
Switch#
Switch#
Switch#show interface vlan 1
Vlan1 is down, line protocol is down
  Hardware is Ethernet SVI, address is c464.1342.ebf (bia c464.1342.ebf)
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive not supported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
  L3 in Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes
  L3 out Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes
  IPv6 L3 in Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes
  IPv6 L3 out Switched: ucast: 0 pkt, 0 bytes - mcast: 0 pkt, 0 bytes
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts (0 IP multicasts)
    0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 interface resets
    0 output buffer failures, 0 output buffers swapped out

```

```

Switch#
Switch#
Switch#
Switch#show vlan summary
Number of existing VLANs           : 5
Number of existing VTP VLANs       : 5
Number of existing extended VLANs  : 0

```

copyright-arista.txt

```
←[Klocalhost(s1)#show version ▯ license
```

```
+++++++
/usr/share/doc/python-requests-1.2.3/LICENSE
+++++++
```

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```
+++++++
/usr/share/doc/python-iniparse-0.4/LICENSE-PSF
+++++++
```

```
←[7m --More-- ←[27m←[K
←[KA. HISTORY OF THE SOFTWARE
```

Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see <http://www.zope.com>). In 2001, the Python Software
Foundation (PSF, see <http://www.python.org/psf/>) was formed, a
non-profit organization created specifically to own Python-related
Intellectual Property. Zope Corporation is a sponsoring member of
the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for

```
←[7m --More-- ←[27m←[K
←[Kthe Open Source Definition). Historically, most, but not all, Python  
releases have also been GPL-compatible; the table below summarizes  
the various releases.
```

Release	Derived from	Year	Owner	GPL- compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)

```

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2.1          2.0+1.6.1  2001      PSF      no
2.0.1        2.0+1.6.1  2001      PSF      yes
2.1.1        2.1+2.0.1  2001      PSF      yes
2.2          2.1.1      2001      PSF      yes
2.1.2        2.1.1      2002      PSF      yes
2.1.3        2.1.2      2002      PSF      yes
2.2.1        2.2        2002      PSF      yes
2.2.2        2.2.1      2002      PSF      yes
2.2.3        2.2.2      2003      PSF      yes
2.3          2.2.2      2002-2003  PSF      yes
2.3.1        2.3        2002-2003  PSF      yes
-[7m --More--  -[27m-[K
-[K  2.3.2      2.3.1      2002-2003  PSF      yes
2.3.3        2.3.2      2002-2003  PSF      yes

```

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- (1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.
- (2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in src/lib/gssapi, including the following files:

```

lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
-[7m --More-- -[27m-[K
-[K lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c

```

```

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lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
←[7m --More-- ←[27m←[K
←[K  lib/gssapi/mechglue/gssd_pname_to_uid.c
    lib/gssapi/mechglue/mglueP.h
    lib/gssapi/mechglue/oid_ops.c
    lib/gssapi/spnego/gssapiP_spnego.h
    lib/gssapi/spnego/spnego_mech.c

```

and the initial implementation of incremental propagation, including the following new or changed files:

```

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
slave/kpropd_rpc.c
slave/kproplog.c

```

and marked portions of the following files:

```

lib/krb5/os/hst_realms.c

```

```

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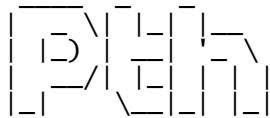
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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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~[K entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

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3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for ~[7m --More-- ~[27m~[K
~[K that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the

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 source code from the same place satisfies the requirement to
 distribute the source code, even though third parties are not
 compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
 Library, but is designed to work with the Library by being compiled or
 linked with it, is called a "work that uses the Library". Such a
 work, in isolation, is not a derivative work of the Library, and
 therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
 creates an executable that is a derivative of the Library (because it
 contains portions of the Library), rather than a "work that uses the
 library". The executable is therefore covered by this License.
 Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
 that is part of the Library, the object code for the work may be a
 derivative work of the Library even though the source code is not.
 Whether this is true is especially significant if the work can be
 linked without the Library, or if the work is itself a library. The
 threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
 structure layouts and accessors, and small macros and small inline
 functions (ten lines or less in length), then the use of the object
 file is unrestricted, regardless of whether it is legally a derivative
 work. (Executables containing this object code plus portions of the
 Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may
 distribute the object code for the work under the terms of Section 6.
 Any executables containing that work also fall under Section 6,
 whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or
 link a "work that uses the Library" with the Library to produce a
 work containing portions of the Library, and distribute that work
 under terms of your choice, provided that the terms permit
 modification of the work for the customer's own use and reverse
 engineering for debugging such modifications.

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 Library is used in it and that the Library and its use are covered by
 this License. You must supply a copy of this License. If the work
 during execution displays copyright notices, you must include the
 copyright notice for the Library among them, as well as a reference
 directing the user to the copy of this License. Also, you must do one
 of these things:

a) Accompany the work with the complete corresponding
 machine-readable source code for the Library including whatever
 changes were used in the work (which must be distributed under
 Sections 1 and 2 above); and, if the work is an executable linked
 with the Library, with the complete machine-readable "work that
 uses the Library", as object code and/or source code, so that the
 user can modify the Library and then relink to produce a modified
 executable containing the modified Library. (It is understood
 that the user who changes the contents of definitions files in the
 Library will not necessarily be able to recompile the application

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to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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Preamble

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Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

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The precise terms and conditions for copying, distribution and modification follow.

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0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of
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 -[Kworks, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through
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 -[Ka computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other
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 -[Kthan the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

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←[Ktechnological measures.

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a) The work must carry prominent notices stating that you modified it, and giving a relevant date.

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b) The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

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a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the

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Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a

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←[K copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the

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e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

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←[Kthe only significant mode of use of the product.

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The requirement to provide Installation Information does not include a requirement to continue to provide support service, warranty, or updates
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Corresponding Source conveyed, and Installation Information provided, in accord with this section must be in a format that is publicly documented (and with an implementation available to the public in source code form), and must require no special password or key for unpacking, reading or copying.

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Theodore Ts'o
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```

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```

-[7m --More-- -[27m-[K
-[K
    Gnomovision version 69, Copyright (C) year  name of author
    Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
    This is free software, and you are welcome to redistribute it
    under certain conditions; type `show c' for details.

```

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```

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.

```

```

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

```

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~[Kwith the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

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Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This

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~[Klicense, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline

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↳[Kfunctions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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↳[Kof these things:

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c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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↳[K d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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←[Kpermitted, and provided that you do these two things:

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A. HISTORY OF THE SOFTWARE

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a

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Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no


```

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2.0          1.6          2000          BeOpen.com    no
1.6.1        1.6          2001          CNRI           yes (2)
2.1          2.0+1.6.1    2001          PSF            no
2.0.1        2.0+1.6.1    2001          PSF            yes
2.1.1        2.1+2.0.1    2001          PSF            yes
2.2          2.1.1        2001          PSF            yes
2.1.2        2.1.1        2002          PSF            yes
2.1.3        2.1.2        2002          PSF            yes
-[7m --More--  -[27m-[K
-[K  2.2.1      2.2          2002          PSF            yes
2.2.2        2.2.1        2002          PSF            yes
2.2.3        2.2.2        2003          PSF            yes
2.3          2.2.2        2002-2003      PSF            yes
2.3.1        2.3          2002-2003      PSF            yes
2.3.2        2.3.1        2002-2003      PSF            yes
2.3.3        2.3.2        2002-2003      PSF            yes
2.3.4        2.3.3        2004          PSF            yes
2.3.5        2.3.4        2005          PSF            yes
2.4          2.3          2004          PSF            yes
2.4.1        2.4          2005          PSF            yes
2.4.2        2.4.1        2005          PSF            yes
2.4.3        2.4.2        2006          PSF            yes
2.4.4        2.4.3        2006          PSF            yes
2.5          2.4          2006          PSF            yes
2.5.1        2.5          2007          PSF            yes
2.5.2        2.5.1        2008          PSF            yes
2.5.3        2.5.2        2008          PSF            yes
2.6          2.5          2008          PSF            yes
2.6.1        2.6          2008          PSF            yes
2.6.2        2.6.1        2009          PSF            yes
2.6.3        2.6.2        2009          PSF            yes
2.6.4        2.6.3        2009          PSF            yes
-[7m --More--  -[27m-[K
-[K  2.6.5      2.6.4        2010          PSF            yes
2.7          2.6          2010          PSF            yes

```

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```
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++++++

/usr/share/doc/hostname-3.04/COPYRIGHT

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hostname -- set the host name or show the host/domain name

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

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-[7m --More-- -[27m-[K
-[KThe hypothetical commands `show w' and `show c' should show the appropriate
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```

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-[7m --More-- -[27m-[K
-[K/usr/share/doc/wget-1.12/COPYING
+++++++

```

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-[K

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```

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-[K For the developers' and authors' protection, the GPL clearly explains
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```

-[7m --More-- -[27m-[K
-[K
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```

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-[7m --More-- -[27m-[K
-[K on the Program.

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```

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--More--
[K Preamble

```

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*
*      @(#)bitstring.h 8.1 (Berkeley) 7/19/93
*/

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Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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←[Ka textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

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←[Kworks together with the library.

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 a purpose that is entirely well-defined independent of the

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```
←[7m --More-- ←[27m←[K
←[Kwhen it starts in an interactive mode:
```

```
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```
<one line to give the library's name and a brief idea of what it does.>
-[7m --More-- -[27m-[K
-[K   Copyright (C) <year>  <name of author>
```

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```
-[7m --More-- -[27m-[K
-[K   Yoyodyne, Inc., hereby disclaims all copyright interest in the
    'library `Frob' (a library for tweaking knobs) written by James Random Hacker.
```

```
<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice
```

That's all there is to it!

```
+++++++
/usr/share/doc/libidn-1.18/COPYING.LIB
+++++++
```

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 -[7m --More-- -[27m-[K
 -[K the version number 2.1.]

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←[Kintroduced by others.
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←[K

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←[K

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←[K(which use some of those functions and data) to form executables.

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←[Kthese notices.
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threshold for this to be true is not precisely defined by law.

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 ←[KLibrary will still fall under Section 6.)

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 ←[K machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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Ty Coon, President of Vice

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++++++

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/usr/share/doc/openssh-5.5p1/LICENCE
+++++++
```

This file is part of the OpenSSH software.

The licences which components of this software fall under are as follows. First, we will summarize and say that all components are under a BSD licence, or a licence more free than that.

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1)

```
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*                               All rights reserved
*
* As far as I am concerned, the code I have written for this software
* can be used freely for any purpose. Any derived versions of this
* software must be clearly marked as such, and if the derived work is
* incompatible with the protocol description in the RFC file, it must be
* called by a name other than "ssh" or "Secure Shell".
```

```
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←[K [Tatu continues]
* However, I am not implying to give any licenses to any patents or
* copyrights held by third parties, and the software includes parts that
* are not under my direct control. As far as I know, all included
* source code is used in accordance with the relevant license agreements
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```

[However, none of that term is relevant at this point in time. All of these restrictively licenced software components which he talks about have been removed from OpenSSH, i.e.,

- RSA is no longer included, found in the OpenSSL library
- IDEA is no longer included, its use is deprecated
- DES is now external, in the OpenSSL library
- GMP is no longer used, and instead we call BN code from OpenSSL
- Zlib is now external, in a library
- The make-ssh-known-hosts script is no longer included
- TSS has been removed
- MD5 is now external, in the OpenSSL library
- RC4 support has been replaced with ARC4 support from OpenSSL
- Blowfish is now external, in the OpenSSL library

```
←[7m --More-- ←[27m←[K
←[K [The licence continues]
```

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The 32-bit CRC compensation attack detector in deattack.c was
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* Cryptographic attack detector for ssh - source code
 *
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*
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*
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* @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>
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above cannot be given local legal effect according to their terms,
reviewing courts shall apply local law that most closely approximates
an absolute waiver of all civil liability in connection with the
Program, unless a warranty or assumption of liability accompanies a
copy of the Program in return for a fee.

```

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How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```

<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>

```

```

-[7m --More-- -[27m-[K
-[K This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

```

```

This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

```

```

You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.

```

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```

<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.

```

```

-[7m --More-- -[27m-[K
-[K The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, your program's commands
might be different; for a GUI interface, you would use an "about box".

```

You should also get your employer (if you work as a programmer) or school, if any, to sign a "copyright disclaimer" for the program, if necessary. For more information on this, and how to apply and follow the GNU GPL, see <http://www.gnu.org/licenses/>.

The GNU General Public License does not permit incorporating your program

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<http://www.gnu.org/philosophy/why-not-lgpl.html>.

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 /usr/share/doc/libuser-0.56.18/COPYING
 ++++++

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 [K Version 2, June 1991
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 of this license document, but changing it is not allowed.

[This is the first released version of the library GPL. It is
 numbered 2 because it goes with version 2 of the ordinary GPL.]

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For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

--More-- [K
 [K Also, for each distributor's protection, we want to make certain

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that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

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Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a ~[7m --More-- ~[27m~[K
~[Kprogram and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and ~[7m --More-- ~[27m~[K
~[Kmodification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the

Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

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You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and

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therefore falls outside the scope of this License.

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←[K

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

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←[KAny executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that

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←[K uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

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b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

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←[7m --More-- ←[27m←[K

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←[7m^L←[27m

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-[7m^L-[27m
-[7m --More-- -[27m-[K
-[K How to Apply These Terms to Your New Libraries

```

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<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

```

-[7m --More-- -[27m-[K
-[K+++++++
/usr/share/doc/libassuan-2.0.0/COPYING
+++++++

```

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```

-[7m --More-- -[27m-[K
-[Kany other work released this way by its authors. You can apply it to
your programs, too.

```

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Developers that use the GNU GPL protect your rights with two steps: (1) assert copyright on the software, and (2) offer you this License

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-[7m --More-- -[27m-[K
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Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

```

--More--
[K

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A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

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An interactive user interface displays "Appropriate Legal Notices"

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←[K

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

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←[K The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

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If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively state the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
<one line to give the program's name and a brief idea of what it does.>
Copyright (C) <year> <name of author>
```

```
This program is free software: you can redistribute it and/or modify
it under the terms of the GNU General Public License as published by
the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.
```

```
This program is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
<[7m --More-- <[27m<[K
<[K    MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.
```

```
You should have received a copy of the GNU General Public License
along with this program. If not, see <http://www.gnu.org/licenses/>.
```

Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```
<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

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```
<[7m --More-- <[27m<[K
<[K<http://www.gnu.org/licenses/>.
```

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```
+++++++
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+++++++
```


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Version 2, June 1991

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 Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
 This is free software, and you are welcome to redistribute it
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 ↵[K
 <signature of Ty Coon>, 1 April 1989
 Ty Coon, President of Vice

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 ↵[K++++++
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```

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*/

```

```

--More--
[K+++++++
/usr/share/doc/libvirt-0.8.3/COPYING.LIB
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```

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Version 2.1, February 1999

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control

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 compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
 Library, but is designed to work with the Library by being compiled or
 linked with it, is called a "work that uses the Library". Such a
 work, in isolation, is not a derivative work of the Library, and
 therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library
 creates an executable that is a derivative of the Library (because it
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 ↳[Kcontains portions of the Library), rather than a "work that uses the
 library". The executable is therefore covered by this License.
 Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
 that is part of the Library, the object code for the work may be a
 derivative work of the Library even though the source code is not.
 Whether this is true is especially significant if the work can be
 linked without the Library, or if the work is itself a library. The
 threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
 structure layouts and accessors, and small macros and small inline

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 functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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 -[K 6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

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 -[K that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.
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For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception,

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--More--
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```

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←[K <program> Copyright (C) <year> <name of author>
    This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
    This is free software, and you are welcome to redistribute it
    under certain conditions; type `show c' for details.

```

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```

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←[K/usr/share/doc/nginx-1.6.2/LICENSE
+++++++

```

```

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 */

```

```

+++++++
/usr/share/doc/fuse-libs-2.8.5/COPYING.LIB
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```

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Version 2, June 1991

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Finally, any free program is threatened constantly by software
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```

-[Klocalhost(s1)#
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```

help-Cisco 4948E.txt

Switch>help

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help-EOS 4.4.0.txt

localhost#help

Help may be requested at any point in a command by entering a question mark '?'. If nothing matches, the help list will be empty and you must backup until entering a '?' shows the available options.

Two styles of help are provided:

1. Full help is available when you are ready to enter a command argument (e.g. 'show ?') and describes each possible argument.
2. Partial help is provided when an abbreviated argument is entered and you want to know what arguments match the input (e.g. 'show pr?'.)

localhost#

IOS Copyright.txt

Rommon reg: 0x00000780
Reset2Reg: 0x00009EFF

##

Fortooin controller 0x0B593D4F..0x0B6D4D98 original size:0x001ABAC1

#####

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Cisco IOS Software, Catalyst 4500 L3 Switch Software (cat4500e-IPBASE-M), Version 12.2(54)SG1, RELEASE SOFTWARE (fc1)
Technical Support: <http://www.cisco.com/techsupport>
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cisco WS-C4948E (MPC8548) processor (revision 5) with 1048576K bytes of memory.
Processor board ID CAT1552S66E
MPC8548 CPU at 1GHz, Cisco Catalyst 4948E
Last reset from PowerUp
1 Virtual Ethernet interface
48 Gigabit Ethernet interfaces
4 Ten Gigabit Ethernet interfaces
511K bytes of non-volatile configuration memory.

Press RETURN to get started!

Switch>

```
show ip ospf -Cisco 4948E.txt
Switch>show ip ospf ?
<1-65535>      Process ID number
border-routers  Border and Boundary Router Information
database        Database summary
interface       Interface information
max-metric      Max-metric origination information
mpls            MPLS related information
neighbor        Neighbor list
sham-links      Sham link information
statistics       Various OSPF Statistics
summary-address Summary-address redistribution Information
timers          OSPF timers information
traffic         Traffic related statistics
virtual-links   Virtual link information
|              Output modifiers
<cr>
```

show output.txt

```
localhost#show ?
aaa          Show AAA values
arp          ARP table
boot-config  Show boot configuration
boot-extensions Contents of boot extensions configuration
clock        Display the system clock
diagnostic   Show diagnostic tests
dot1q-tunnel Show all enabled dot1q-tunnel ports
environment  Show environment status
errdisable   Show errdisable information
error        Show detailed information about an earlier error
extensions   EOS extensions present on this device
file         Show filesystem information
flowcontrol  Show interface flowcontrol information
history      Display the session command history
installed-extensions Installed EOS extensions
interfaces   Interface status and configuration
inventory    Display hardware inventory with serial numbers
ip           IP information
lacp         Link Aggregation Control Protocol (LACP) status
lldp         Show Link Layer Discovery Protocol (LLDP) status
logging      Show the contents of logging buffers
mac-address-table MAC forwarding table
mlag         MLAG status
monitor      Mirroring information
ntp          Network Time Protocol
platform     Platform-specific functions
port-channel port-channel status
privilege    Display the current privilege level
processes    Show cpu and memory usage of running processes
radius       RADIUS server attributes
reload       Display system reload status
running-config Current operating configuration
sflow        sFlow configuration
snmp         SNMP statistics
spanning-tree Spanning tree topology
startup-config Contents of startup configuration
tacacs       TACACS+ server attributes
tech-support Show aggregated status and configuration details
trace        Show trace settings
uptime       Show how long the system has been running
users        Display information about terminal lines
version      Show switch version information
vlan         Show VLAN status
```